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W O R L D

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Telecom discovers 'logical' services

SYDNEY — Telecom is changing the rules of key networking services, extending its interconnect policy to high bandwidth multiplexed voice and data channels in a move to maximise revenue generation, according to a preliminary statement of emerging policies.

Telecom is adopting a new view of such multiplexed connections, said Dennis Hambleton, manager of regulatory strategy. The new multiplex policy is to be introduced April 1, next year.

He told a recent Atug special interest group meeting here that last year's policy had been premised on the bypass of the trunk network applied directly to voice bandwidth services — analogue services up to 4KHz and data services with speeds up to 9.6K-bits/sec.

☐ Take the money and run — p4

Originally, services with greater speed and bandwidth were referred to as wideband services, but Telecom had now discontinued use of that term as it had other uses in other contexts, such as 64K-bits/sec in the coming ISDN environment.

"We have now adopted the term multiplex services — which is after all more descriptive of the manner in which the high-bandwidths are actually interconnected to the public switched network," Hambleton explained.

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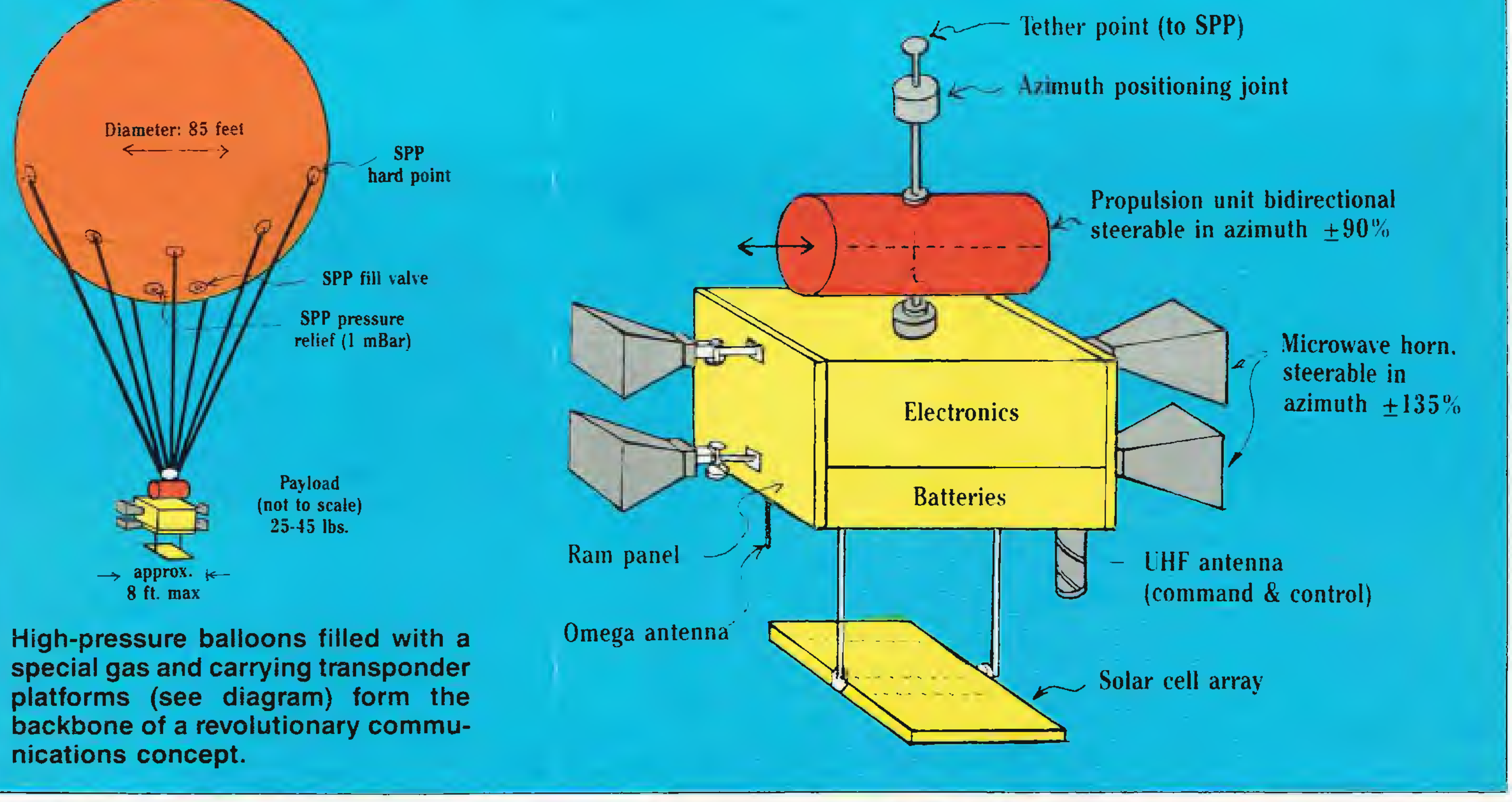
Just pie in the sky? No, it's definitely a goer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Solar cell array

High-pressure balloons filled with a special gas and carrying transponder platforms (see diagram) form the backbone of a revolutionary communications concept.

Space balloons will slash costs

By Luis Huesch

NORTH SYDNEY — Australia has a good chance to become the first user outside North America of a low-cost "inner space" dynamic communications system that employs bands of drifting gas-lifted transponder platforms.

The scheme, initially developed for the US Navy to help submarines navigate in polar regions, is no commercial "pie-in-the-sky": the innovative system has already been ordered by Canada.

The first of its platforms will be lifted into a geosynchronous orbit by a special proprietary gas envelope next March or April. The Canadian communications "ring" is to be in place by September or October next year.

Under the system, devised by former Intelsat network director Sidney Browne, bands of "intelligent" platforms are spaced 1600m apart at an altitude of between 36,500m and 39,500m — twice as high as commercial air traffic but way below the 200km orbits of satellites.

The platforms — supported by a high-strength polymer film balloon that automatically maintains its pressure and therefore stays within 100m of its intended altitude — are designed to self-destruct completely if they drift below 30,500m. In keeping with their military origins, the platforms are essentially invisible to radar: their radar cross section is less than 0.1 square metre.

Each station's "footprint," the area in which line of sight communication is possible from the ground, is just under 1600km. To cover an area properly, each band is "over-seeded" with platforms to achieve triple redundancy.

According to Compass Research managing director Adrian Wood, each of the platforms can support the equivalent of 10,000 64KHz digital circuits under a simplex packet-switching protocol.

He said the designers claimed to be able to provide private communications networks, with possible interconnection into existing networks, for about a quarter of the cost of a similar satellite system.

Low power requirements and favorable link margins due to the closeness of the transponder platforms made minuscule ground stations possible, he said.

Wood said he understood that all that was needed to operate such a private system was a transmission licence from the Department of Communications.

Compass is briefing OTC, Telecom, Aussat and communications authorities, users and manufacturers in Australia and the Pacific region about the new technology on behalf of the Californian de-

(Continued page 5)

NEAX shrinks the West

PERTH — A $4.3 million, wide area private integrated voice/data network based on 12 Neax 2000 switches, eight digital radio links, and six digital cable trunks is nearing completion in the West Australian Pilbara mining region. It is designed to provide corporate communications over some of the most rugged terrain in the country.

The network, described by development consultant Laurie Hurley as state of the art technology having "no parallel anywhere else in the country", is being built by Telecom for Hamersley Iron as a replacement for a 20-year-old system of voice and data networks.

Tony Henniker, senior project engineer with Hamersley, said the original system supplied by Telecom had "outlived its usefulness". The voice and data networks of 2000-plus PABX and PAX lines, DDS and Datel services, linked HP 3000 minis on sites and remote access to the company's IBM mainframe in Perth, had become "plain inefficient," he said.

Hamersley — advised by CRA subsidiary Minenco during the 30-month negotiations and tech-

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AD Marketing
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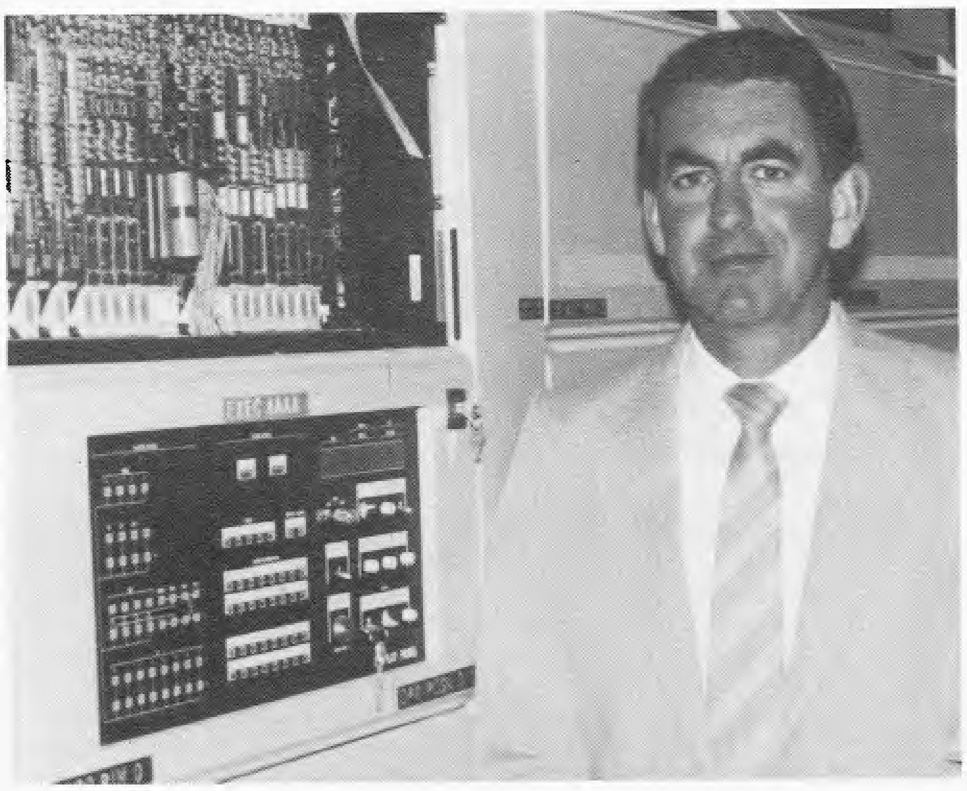
Queensland is ringing to tune of NEAX 2400

By Peter Young



John Spinaze . . . "quite happy with Telecom's pricing levels at the moment."

BRISBANE — A leading contender for the title of Australia's largest third-generation PABX network has generated some impressive economics. The $7 million Queensland system, built around NEC's market-leading NEAX 2400 exchanges, has also produced a few migraines for its operator, the State Works Department.

Among them:

- Delays in acquiring a workable telephone information management system (TIMS).
- Inter-exchange restrictions on several features, including call pickup groups.
- Last-number redial problems.

The network (see diagram below) essentially acts as the Queensland government's major inhouse phone system and sprawls across 13,000 extensions connected to nearly a dozen NEAX 2400 units rented from Telecom Australia, plus 18 other assorted PABXs.

The man with the best view of it is John Spinaze, executive engineer with the communications and electronics group of Queensland's Department of Works.

Spinaze oversaw the system expansion from a pair of 17-year-old ARD 591 PABXs in 1985 to the current system, which covers not only the Brisbane area but extends via Q-Net, the government's Aussat-powered communications grid, to provincial centres in Townsville and Cairns. It will expand again in the near future to take in the further regional centres of Bundaberg, Mackay, Rockhampton and Mt Isa.

The economics of the third-generation gear are working out well, according to Spinaze. Annual rental costs have risen only 12 per cent for each 30 per cent improvement in capacity, he said.

Maintenance fees are about $280,000 a year. This works out to 4 per cent of the equipment's capital cost.

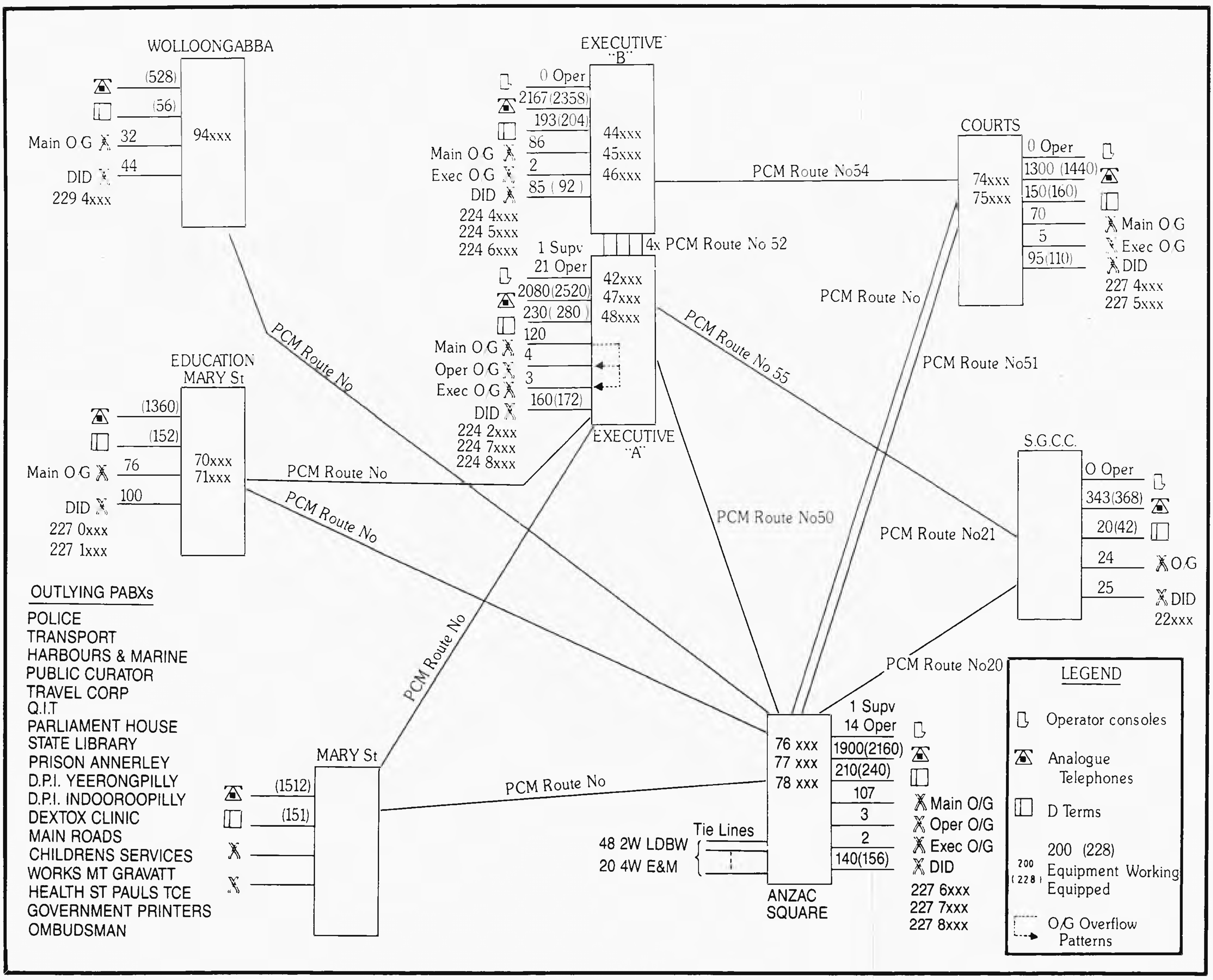
"Some of the other figures are looking even better as time goes on," Spinaze said. "Including everything, we are paying about $450 per extension per year, and that figure is continuing to decrease.

"I don't think we are getting any special deals from Telecom. It's just that the underlying cost of the technology is coming down. We keep an eye on the pricing around the industry, and we are quite happy with Telecom's levels at the moment."

An added factor in favor of Telecom was its depth of engineering support. That was particularly valuable when the initial switch to NEAX was made because Spinaze was then the sole member of what has now become a five-person communications group.

Seven NEAX nodes at major government sites throughout Brisbane are linked by two megabit PCM lines that carry 30 voice channels, a supervisory channel and a signalling channel (CCITT No 7).

(Continued page 6)



It's tempting to take the money

● *Tom Amos is a partner with the communications consultants Amos, Aked & Swift.*

By Tom Amos

DATA communications services which save money for the user and at the same time deliver better performance and control are always of interest to the hard-pushed corporate user.

All that glisters is not gold and, especially where Telecom is active, more little, unplanned manipulations could be just possible. Whether to take the money advantages of today and run with no view to the future is a difficult decision.

The rapid increase in service offerings from Telecom has little precedent with a major shift in attention by Telecom from traditional basic to now premium (without the crackle) voice, data and other value-added services.

It is interesting to note also Telecom's entry into the Value Added Network (Van) area such as EFT/POS, essentially expanding its role and business scope to a wider application base.

One service which is to receive attention is the "high speed" multiplex services of Austplex and Netplex which provide digital traffic combinations and capacities between two points on a mix-and-match basis.

A DDS Netplex service on DDN allows the multiplexing of data from a number of different terminal stations into a single multiplex stream that can be accepted directly by a central station. An exclusive, dedicated communications path is provided between each terminal station and the central station.

Netplex combines transmission and multiplexing functions to provide cost and control advantages to customers prepared to adopt the service.

Telecom supply a special NTU with the service that provides timing to allow demultiplexing by a customer's front-end equipment. Data crosses the DTE/NTU interface at the central station in a 48K-bit/sec time division multiplex stream. A multipex time slot is provided for each terminal station and the format of the multiplex stream is defined by CCITT Recommendation X.22.

At present the X.22 interface is able to accommodate a few fixed combinations of data circuits up to a maximum aggregate data rate of 48K-bit/sec.

The X.22 multiplex facility allows the customer to multiplex five 9600-bit/sec, 10 4800-bit/sec or 20 2400-bit/sec services, using one of the number of commercially available X.22 multiplexers, and deliver them to the DDN for distribution within the network. The major advantages of X.22 is that it generally reduces the cost of access at the host site to DDN and in most cases requires less installation space.

A mix-and-match version of Netplex, to be known as homogeneous Netplex, will be introduced soon and will allow the combination of synchronous different speed data streams into a single netplex NTU. Even more flexibility than the existing Netplex is offered by this proposed system.

Austplex is further up market than Netplex with higher speeds and an on premises multiplexing facility to multiple 2M-bit/sec services or 48-bit/sec. For large systems, the Austplex systems offers substantial cost savings and the ability to further enhance the services with a Customer Test System and Vitalink.

Using services require the election of the DDS range of services over more traditional Datel services. Cost savings may be available in the short term, but be aware that Telecom will continue to change the rules interpretation to gain commercial advantages over private networks. In essence Telecom will change the various service and price relativities to compensate for users moving from one service to another.

For example the recent Megaband dramatic price rises for 2M-bits/sec short haul services created an interesting debate as to cost structures and Telecom business acumen (or lack of it). Some few months later, after Telecom claimed an error in pricing was the result of the massive tariff increases, a more plausible explanation has emerged.

Dennis Hambleton, speaking at the Atug forum on carrier perceptions and on behalf of Telecom (OLJH), identified some of the policy interpretation which is to come, especially on multiplex services.

It was stated or implied that:

- Repricing of Megalink services was to encourage Multiplex utilisation.
- Emphasis on multidrop and aggregation benefits of Multiplex services would be maintained.
- Prices of services would be continually reviewed and adjusted to reflect Telecom's aims and goals, not the customer's.
- The utilisation of private networks on Telecom lines will now require full disclosure as to the nature of the network and its content.
- Penalty for non full disclosure would be the assumption by Telecom that lines attract the maximum social obligation interconnect charge.

The Telecom desire, it appears, is to create a free flowing migration path to move current private data network clients to public networks by utilising regulatory tools for non-regulatory purposes. Many sections of the Telecom Act and bylaws were quoted by Hambleton to support this new, liberated view of marketing.

For example, the local access charge which is an integral part of collection for multiplex type services was specifically mentioned. It was suggested that Telecom, with a price list service for local access lines, would have two prices for such a line: the price list when connected to Telecom public services and a commercial rate, when connected to Telecom or other carrier provided services which form part of, say, a multiplex service in a private network.

The rub is that Telecom, according to Hambleton, retains the rights to assess the line cost depending upon the data or content to be carried over the line, on a line-by-line basis.

Discounts therefore may be obtained if you are a large user with clout, or penalties if you are not. You do not have the choice — and to cap it all off, Telecom may re-assess at any time your network pricing mix if you change your application.

Telecom retains the right to enter your premises at any time, under any circumstances to check you are not cheating. Shades of Europe in the 30s near the 90s.

Telecom is introducing a new range of digital services which are for public consumption. It appears that to ensure success of these new venture offerings, the regulatory powers are being used for pure commercial gain and risk minimisation. All for the good of the Australian public, of course.

Significant savings can accrue if such new services as Multiplex and Megalink are corporately embraced. But with the taste of arbitrary rises and the stated intention to examine and autonomously determine private network charges, then risks of using such services are great if cost savings are the primary justification.

Telecom earth station goes on safari

TELECOM likes to make sure it stays in the race — and if that involves roughing it over 6500km of outback tracks with a transportable earthstation in tow, so be it.

Actually, taking part in Wynn's Safari from Sydney to Darwin with a specially adapted INS earthstation and specially trained Telecom staff was as good an occasion as any to demonstrate Telecom's satellite services.

The transportable earthstation, shown here as a high-tech backdrop to Hans Tholstrup the latter-day explorer, was leased to safari organisers Energy Promotions for the nine-day event late in September.

It provided six channels for telephony, facsimile and data for both essential communications and was a media news "pipeline" for the 30-odd journalists accompanying the around 900-strong safari.

Calls to and from the safari were routed via the Aussat transponder of Telecom's Iterra Network Service (INS) and the INS major earthstation at Bendigo, Victoria, with a dedicated NEC Neax 61 exchange which sets up the satellite calls and monitors up to 200 circuits, as well as a gateway to the public switched telephone network.

The Neax 61, the only one of its type in the Telecom network, is normally used for any line, mobile or satellite telephony switching applications, but has been specially adapted to manage the INS. Special hardware and software — called the Radio Application Interface Frame (RAIF) — has been added, including a remote processor and voice channel repeaters for each satellite circuit used. The special software is used to set up calls by demand-assigned multiple access (Dama), assigning channels to the available frequencies. The Neax 61 also monitors all calls to and from the service and keeps track of charges, including any that might cross charging time zones.

Customer connections can be made within minutes from a terminal, as all subscriber data is stored in software, according to Telecom.

The Telecom 10C electronic trunk exchange provides automatic connection to the PSTN. Customer leased lines can be accommodated by reconfiguring the exchange.

— Luis Huesch

Space balloons will slash costs

(Continued from page 1)

velopers, Scientific Research Laboratories (SRL), and marketers, High Altitude Transponder Systems Inc (HAT).

Wood said Compass had been requested to analyse the scope for such low-level spatial networks in Australia and the Pacific region, and to make recommendations to SRL as well as to interested commercial partners.

He said it would cost $US13.5 million to place twin bands of some 155 platforms in place to cover Australia. Individual platforms would travel across the continent in a 14 to 21 day cycle at 72kph ground speed and cover an area of 20 degrees latitude and 20 degrees longitude each. The price included 10 network nodes (small earth stations), a ground control centre and training.

SRL claims that it can set up complete packet-switching private networks for video, voice and data within 45 days from launching the first platform.

Wood said SRL provided a perpetual licence for a private network even though the individual platform's design life was only three years. However, the company guaranteed to put up replacement platforms as required. An annual $US3 million charge covered maintenance, ground control services and "technology updates".

Each of the up to 10 transponders on board one of the floating Super Pressure Platforms can handle a mix of C-band, K-band, VHF and UHF channels, 3KHz analogue or 64KHz or 32KHz digital voice, directly modulated data and video.

Horn antennas

According to Wood, up to three or four TV channels can be accommodated, opening up an alternative to closed-user group telecasting via Aussat. He said the technology could obviate the need for cable TV.

It could also form the backbone of a UHF mobile telephone system with direct access by small handheld transceivers, similar but superior to cellular radio, said Wood.

Beam switching permits a large number of users to be serviced with a single operating frequency, and adaptive routing maximises transponder capacity and overcomes pipeline limitations, according to the designers.

UHF signals from the network ground station are used to train the platform antennas in real time, and to keep the platform positioned properly. Using omni-directional antennas and a 19.2K-bit/sec digital channel, the control system employs store and forward digital communication techniques to address each platform.

The ground station also controls user node points having 10cm by 30.48cm high-gain horn antennas used for data transfer: these are positioned by the control centre according to the navigational information received from each platform.

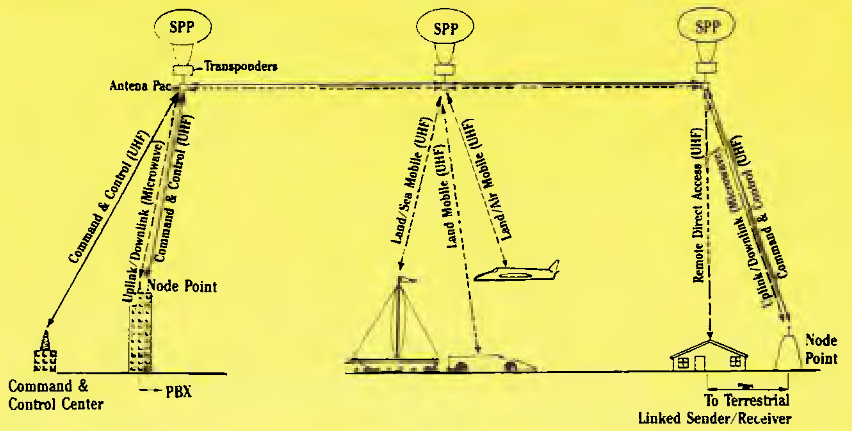
A single node may simultaneously "see" several platform transponders and can establish a "tree" of possible connection for the packetised signals.

After traversing the allotted band of platforms the packet signal is received at the proper node point, sequenced, reassembled and error-corrected.

Wood said the quality of the signal was "vastly superior" from a platform. There was no echo, and much less power was needed for communicating with the platform, typically 1W for an omnidirectional antenna.

He said the technology was very appropriate for countries such as Australia, with a large land mass and dispersed population, because it allowed the building of very economic networks.

He said Compass Research had advised SRL to consider local manufacture in Australia for such items as the proprietary ground antennas.



This conceptual presentation of the HAT system shows the signalling pathways that can be established between ground or mobile stations via the drifting Super Pressure Platforms. It is interesting to note that both the airborne transponders and the client's transmit/receive horns at the node points are controlled from the network's one ground control centre to keep proper tracking attitude. Not shown in the diagram is the possible use of SPPs as intermediate link points in a conventional satellite system.

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MODEMS BY DATACRAFT

'Plant floor' computer also gateway to Map

CW International News Service

RYE BROOK, New York — IBM has announced its first plant floor computer, said to monitor and control manufacturing operations without an operator. Compatible with the AT, the IBM 7552 Industrial Computer is based on a 10MHz 80286 microprocessor and can function as a manufacturing cell controller or workstation.

The 7552 also can serve as a gateway to the Manufacturing Automation Protocol (Map), an industrial local-area network originated by General Motors and based on the IEEE 802.4 broadband token bus protocol. In addition, the unit can provide communications between plant host computers and plant floor programmable logic and device controllers.

Front access to the power supply and plugable components, including encased expansion cards and the hard/floppy drive, keep maintenance of the upright machine simple and do away with the need for tools.

Since it does not need air conditioning, it can be built into industry-standard Necma enclosures, or can be used in a standard 25cm rack or floor mount.

Battery backup is standard and critical data can be recovered after power failures. A keyboard and display are not required; the IBM 7552 can be programmed with an IBM 7531/7532 Industrial computer. US prices range from $US6770 to $US9370.

IBM also announced Remote Terminal Interface Utility Programs for the 7552, which support the Remote Terminal Interface (RTI) adapter, and connect industrial computers to the IBM 7552 when it is used without a monitor, keyboard or diskette and as a remote terminal.

The 7552 and related software are slated for a first-quarter 1987 delivery.

GM flunks Map show

Meanwhile in Detroit, General Motors said its next major demonstration of Map's networking capabilities is planned not for the November 11-14 Autofact 1986, but for the 1987 show. A major reason for the delay is that it wants to use the protocol's latest version 3.0, which is still being finalised by industry standards groups.

The car maker is encouraging vendors to join in the specification process. The preliminary Map 3.0 specifications are to be drawn up by the end of the year, at which time the specifications will be supplied to participating vendors for review.

By April 1987 a 3.0 draft specification is expected to be released for comments. The final version will be drawn up in the autumn of 1987, for release at the beginning of 1988.

Siemens may buy France's CGCT

By Dennis Phillips
CW International News Service

BONN — West German electronics and communications giant Siemens AG, flush with billions of dollars of ready cash, may buy France's Compagnie Generale de Construction Telephonique (CGCT) — seeking to achieve technology gains and to re-balance the telecommunications market shares in Europe.

German Bundespost (PTT) officials applauded such a move as reflecting "a certain reciprocity" following the announced merger of ITT's telecommunications interests with France's Compagnie of ITT's telecommunications interests with France's Compagnie Generale d'Electricite (CGE).

ITT's German daughter, SEL, is one of the two main suppliers of digital switches to the Bundespost. The other supplier is Siemens.

France's decision on whether Siemens, AT&T or L M Ericsson will gain control of CGCT is still pending. But Prime Minister Jacques Chirac is said to favor Siemens' bid.

Commenting on the importance of the pending sale of CGCT, which is said to hold 16 per cent of the French market for digital switches, Bundespost official Arnold Dohmen said it "certainly means a change in the European telecommunications market and beyond".

That viewpoint is also shared by Siemens officials, according to company spokesman Norbert Bininda. France offers a big digital market, with replacement orders alone expected to total 1.5 million lines a year, he pointed out. Starting in 1990, France will be installing digital only, Bininda said.

Perhaps just as interesting as the French market would be the opportunity to export Siemens' digital switchboards to other countries with close ties to France.

Costs soaring

"We would make them there and would export from there," Bininda siad. "Certainly there are markets where it is more favorable to export from there. Plus there are financing possibilities from the French administration, such as credits for the Third World."

Another Bundespost official said international market share was especially important now that development costs for next-generation digital switches have soared to $US1000 million. "Either you make your sales now, or else where are you going to get the money?" he said.

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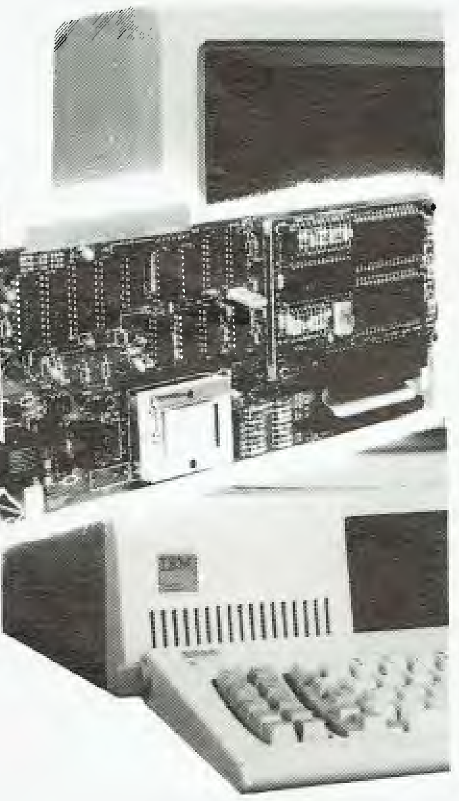

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NEAX calls the tune

(Continued from page 3)

Though expensive, the No 7 technology helps provide a major government aim — user transparency. It also allows centralised attendants to be used. To callers, the seven nodes appear as a single PABX. A five-digit number will reach any extension regardless of its home exchange.

In terms of teething troubles, delays in the arrival of a fully-fledged Tims have caused the most pain. A Tims provides a screen-based directory for operators, records system data such as traffic figures and tie-line capacity, and keeps track of costs through a call accountancy package.

A software package built under contract to Telecom failed to perform the last function adequately. The department in August was still waiting for a replacement to be developed.

Since the department has to bill other users for their portion of the $6 million it costs to run the system annually, "we are a bit keen for the call accountancy package to work," Spinaze said.

Other problems that surfaced included the necessity to do what Spinaze called a major number reshuffle on extensions linked to a twin-NEAX node.

Numbers for phones in the same call pickup group (where any phone in the group can answer an incoming call) were originally assigned across the two exchanges. Then Telecom found the call pickup worked only if all phones on the group were hooked to the same exchange.

Another irritant was the belated discovery that last number redial functions applied to an extension only if its circuit card was located in specific areas of the NEAX unit. "It wasn't in NEC's glossies and Telecom didn't pick it up either. We are now tossing up whether to reshuffle the cards," Spinaze said.

Telecom maintenance has also come under criticism. "I don't believe it's the fault of individual technicians, but their lack of numbers and the fact they are expected to be fully proficient on several different systems has caused several embarrassing outages," he said.

"To Telecom's credit, it has recognised the problem and will introduce a new maintenance organisation with new procedures in the near future. We will be monitoring the performance of the new organisation very closely."

Spinaze expressed satisfaction at the degree of control Telecom was allowing the Works Department to exert over the equipment by using a customer administration terminal (CAT) to reconfigure extension facilities.

In the case of the NEAX 2400, the CAT is a NEC APC. Works will use the data-switching capabilities of the 2400 to allow the CAT to gain access to individual nodes using a combination of D Term voice/data handsets for Brisbane nodes and modems for provincial nodes.

"I believe Telecom has recognised it would require a significantly expanded workforce to respond in reasonable time to the demands placed on them by larger customers with dynamically changing accommodation requirements. They have provided CAT and technical training to us as well xDas complete system documentation."

A Works Department/Telecom initiative that even NEC is following with interest is a trial of the NEC version of CCITT No 7 signalling being used over a satellite circuit at 4.8K-bytes to link PABXs.

Initial results have been encouraging and the department plans to use this type of signalling to provincial centres shortly.

Spinaze said the original justification for the network was based on voice, so "any data we put through is a bonus." Data transmission tests done in conjunction with the State Government Computer Centre (where one 2400 is located) have proved successful at rates up to 9.6K-bit/sec asynchronous and 48K-bit/sec synchronous.

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EVEN to the barely initiated communicator, such as yours truly, there are two items of more than passing interest in this issue — and once more they both concern the one subject: the market behavior of the major player, Telecom. For the first — new rules and prices for multiplex services — there is little I could add to the indepth interpretation by telecomms consultant Tom Amos (see page 4) — except perhaps by saying that it is totally in line with Telecom whispers about what users may face once we have the ISDN. For it is here that differential charging will really come into its own: the person who signs up for what he or she thinks is a 64K-bit/sec voice circuit along which, at a pinch, data could be piped concurrently will find that they are only getting perhaps 12K-bit/sec capacity at the tap — just barely enough for packetised voice. Anything else will have to be paid for — at rates that Telecom will deem logical for the circuit . . .

The second emerges from the story about Hamersley Iron's vast Neax network. While no one would say exactly how or by how much Telecom outbid NEC, one of the consultants involved let slip that the company had "had an eye to Telecom's future vital role in regulation and maintenance".

This reference to the maintenance problem touches on a very sore point indeed, and echoes the sentiments of other contenders in the PABX field who privately complain about the marketing practices of our increasingly predatory monopoly carrier-cum-supplier.

One of them, admittedly a minor player on the local scene, alleged the authority's salesmen went out of their way to make a client renege on an order — by pointing out that Telecom could not promise speedy service on the rival product. This was all the more galling to the supplier because he trains a Telecom technician for every three switches he instals — and would love to "buy" them all back at top salaries if he could do the maintenance.

Another made a graver assertion: Telecom, he said, would receive the required installation forms for regulatory approval with one hand — and then use its sales arm to go out and try to switch the customer to the PABX it peddles itself.

These claims, which have a sad ring of truth about them, are yet another instance for our policy makers to deal with if and when they muster the political will to end the current obscene combination of regulatory power and commercial ambitions.

— Luis Huesch, editor.

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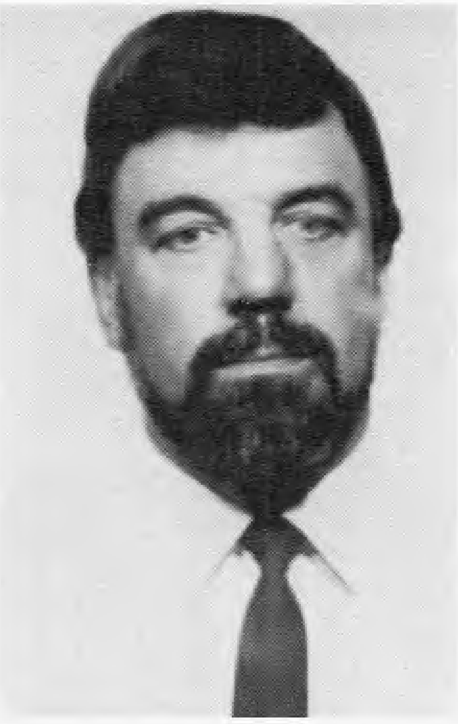
'Crucial' but challenging months ahead for Atug

says new officer from West


Tony Gray . . . "full of ideas".

A COMMUNICATIONS pro whose most recent project was helping co-ordinate a 12-Neax voice/data integrated network for Hamersley Iron has joined the Australian Telecommunications User Group headquarters in Sydney as technical executive officer.

Tony Gray, known in the eastern states as "that Atug man from the West with the boxing kangaroo" for his role in founding the very active WA branch, took over from Gary McMahon on October 1. McMahon has joined the Australian Gas Light Co.

Gray said he is full of new ideas and West Australian entrepreneurial drive to help Atug expand rapidly on a national scale in its vital role in the communications industry.

Although basically "carrier-oriented" in the satellite/microwave and radio fields, Gray has worked on all kinds of communications projects through his consultancy company Commalog, since coming to Australia from the UK more than 10 years ago.

He said he was fortunate in having been involved in the prestigious Hamersley project as a site project co-ordinator under contract to the main consultants, Telecommunications Consultants of Victoria, a practical level experience he expects to stand him in good stead when giving technical support at Atug head office.

His "multi-role capacity" there includes co-ordinating and promoting Atug's interstate activities, membership promotion and technical and management support for Atug executive director Wally Rothwell.

He regards the next six months as crucial to Atug, but also as exciting and challenging. "Atug is the only real voice of the user in Australia — from Perth to Sydney, Darwin to Hobart, from big corporate users to small one-man businesses," he said. "It covers a complete cross-section of the telecommunications field: voice, data, cable, satellite and radio — all with the common aim of ensuring the availability of a wide range of reliable, quality services and products at affordable prices.

Gray said: "Atug also seeks to ensure fair play, and that the carriers provide the user with the services he requires."

- *Tony brought back this inside info on the America's Cup from the Perth waterfront: New Zealand to face Bondy in February.*

'Logical' services

(Continued from page 1)

The policy on this "pipe" of a number of logical circuits was now being redefined to include:

- voice bandwidth services — those currently covered and previously called narrowband service
- multiplex services — those higher bandwidth services that cannot be directly connected to the PSTN but which may be connected indirectly by multiplex and other interface equipment.
- logical voice services — services that arrive on a multiplex channel and consist primarily of voice traffic, and
- logical data services — services that arrive on a multiplex service and are used solely for data purposes.

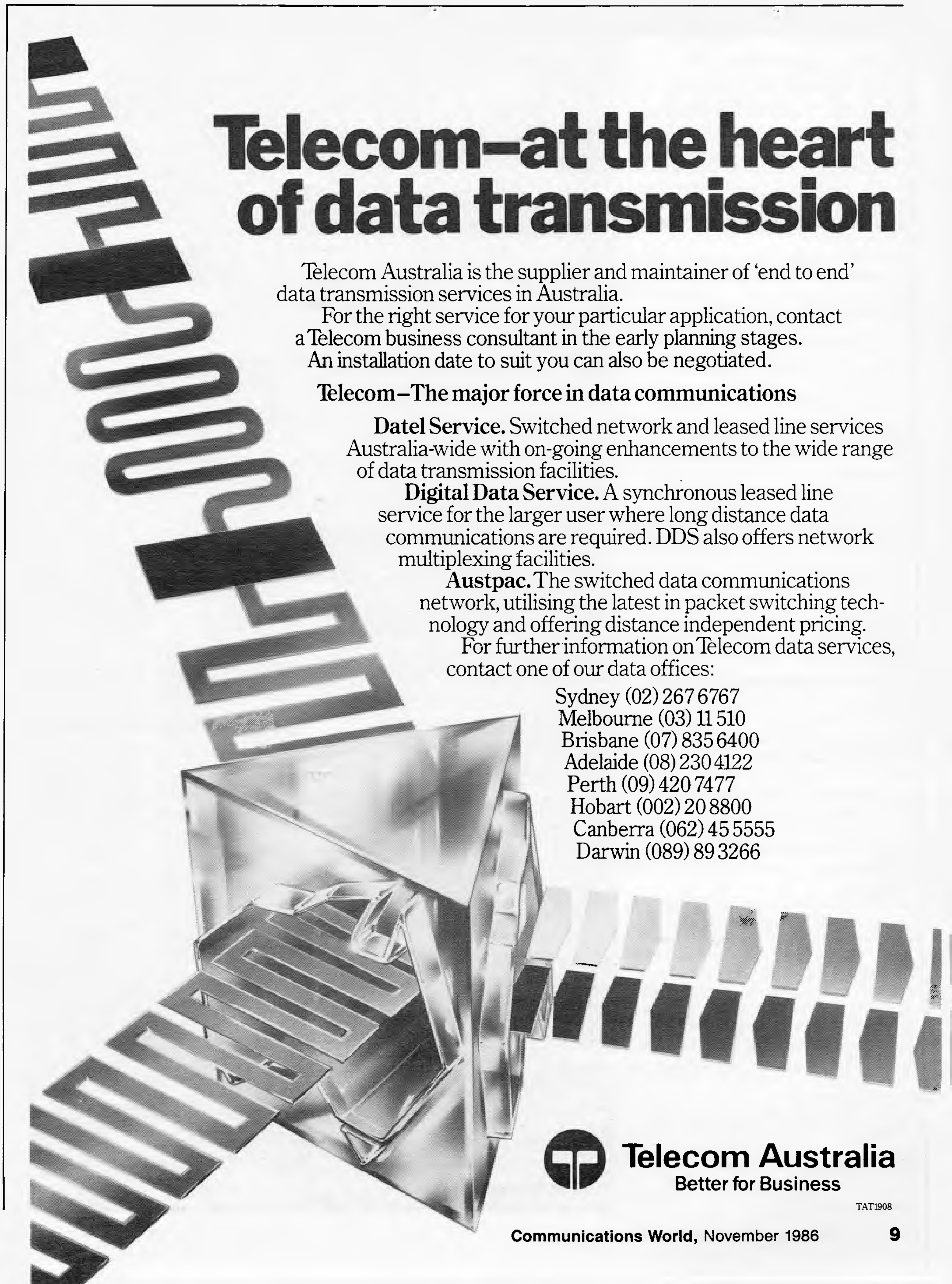
Hambleton, whose position has been specially created and who reports directly to manager of legal and policy Jim Holmes, added:

"The basic philosophy behind the extension of the interconnect policy to multiplexed services is to determine the logical voice band services that arrive on the multiplex service, and . . . to assess the interconnect charges in the same way and at the same tariff as the discrete voice bandwidth services.

Users urged to help draft laws

A FORMER chairman of the US Federal Communications Commission (FCC) has urged users to take on a stronger role in shaping US communications policy and encouraged alternative carriers to continue competing with AT&T in long-distance services.

Richard Wiley, now a senior partner with a Washington law firm, said users should aid in the drafting of communications legislation and participate in FCC regulatory actions.



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Is the standards

Current standards answer many needs. At least the way standardisation is going allows long-range planning, writes Michael Durr.

THE sentiment "once bitten, twice shy" is alive and well among communications systems users.

Nowhere is this more apparent than in the area of standards.

Mention the word "standards," and the most amiable person may get ready for battle. Forget explanations; when allegedly compatible systems cannot communicate, users want blood, not excuses. Although all of the problems are not behind us, real standards are emerging. The work of standards organisations — especially the International Standards Organisation (ISO) — has begun to bear tangible results. Powerful enduser companies are not only encouraging standards, they are demanding standardised products according to a set timetable. Manufacturers are abandoning the protocol business and rallying to the support of nonproprietary standards. The exception to this is IBM, which continues to introduce and attract support for its de facto standards.

Even IBM, though, is beginning to acknowledge nonproprietary standards, especially at the lower levels of the ISO's Open Systems Interconnect (OSI) model.

Network hardware standards

Standards can be grouped into three levels. The lowest level, which corresponds to Layers 1 (physical control) and 2 (link control) of the OSI model, defines the network hardware. At the hardware level, there are three acknowledged network-access standards: Ethernet, token bus and token ring. Each of these has attracted a group of communications equipment manufacturers that more or less adhere to that standard.

However, because there are differences among vendors' implementations, the hardware standards are merely convenient ways to categorise network hardware and have little significance for hardware integration. In fact, the key element in the standardisation process is hardware independence. As long as compatibility exists at the higher levels of the OSI model, the user can choose a variety of hardware.

The subnet

Hardware integration and compatibility, according to the new standardisation efforts, are now governed primarily by the middle communications level in Layers 3 (network control), 4 (transport control) and 5 (session control) of the OSI model.

This level, called the subnet, handles the communications services on the network. All of the many types of network hardware are moving toward the support of a small number of subnet protocols. This permits one type of hardware to be replaced by another type without the necessity of altering the higher network layers or the applications. In other words, the network becomes hardware independent. There will be no single dominant network hardware protocol that will push the other protocols into premature obsolescence.

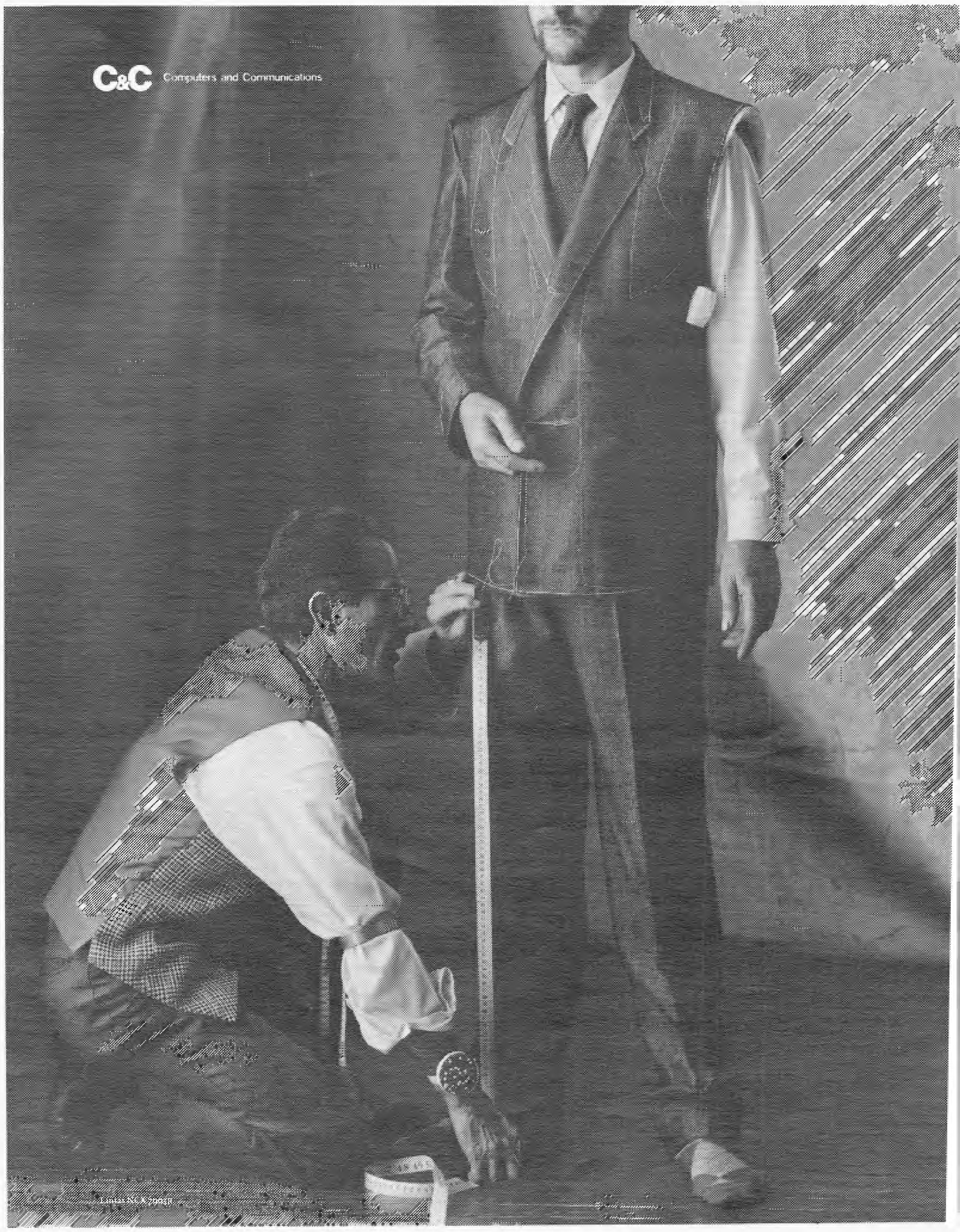
Standardisation at the subnet miminises the cost of migration to totally new hardware systems. Most hardware upgrading can leave costly cabling in place, while the network interface is replaced. If a cable type is selected with a careful eye to projected growth and performance requirements, it will be usable for many years, reducing the long-term cost of the system.

For personal computer networks, the present dominant standard at the subnet level is the Network Basic I/O System (Netbios). A key component of personal computer network system software, Netbios, is primarily firmware embedded in the PC Network and Token Ring boards.

It is also the current standard to which software is written. IBM is supporting Netbios on its current networks and has said it will continue this support on future network products. With this backing, Netbios' compatibility has become a virtual requirement for personal computer networks.

In addition to defining network communications services. Netbios provides a network-to-application interface. Some applications, such as gateways and network file servers, need to communicate directly with nodes on the network. These applicatons can hook into the network through the Netbios interface to conduct peer-to-peer communications. In its current implementation, however, Netbios is slow, and its design makes internetworking difficult. Another IBM protocol, LU 6.2 is already in the wings and will certainly become an alternative to Netbios.

LU 6.2 is part of IBM's Systems Network Architecture, which is the company's overall office communications plan. LU 6.2 provides roughly the same services as Netbios, that is, peer-to-peer communications. But while Netbios makes internetworking almost impossible, LU 6.2 is designed to



dust settling?

optimise internetworking among distributed systems.

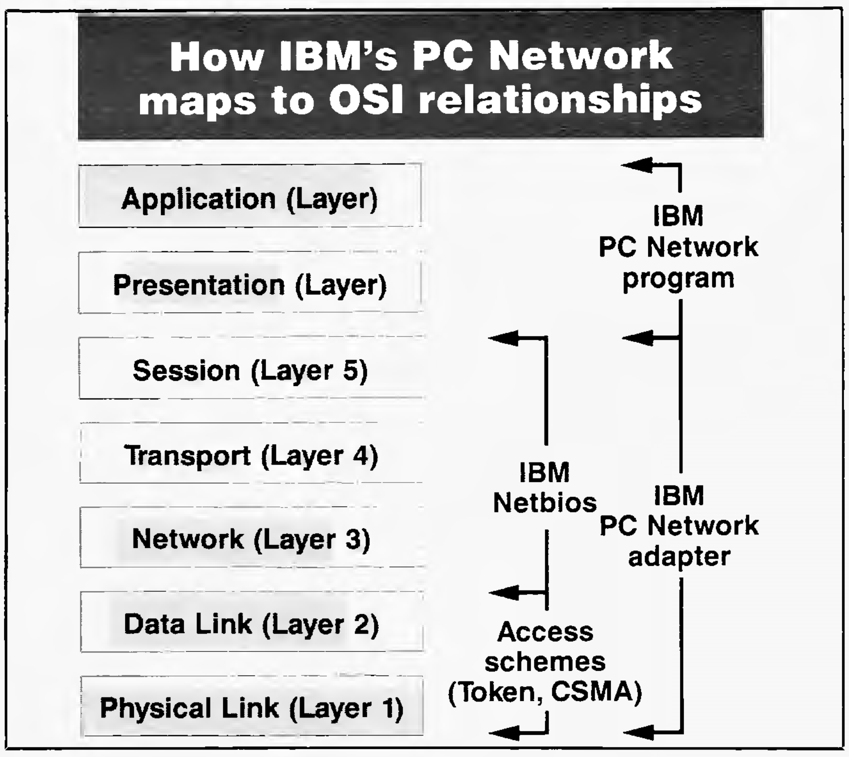
The only apparent drawback to LU 6.2 is that it requires four times as much software or firmware code as Netbios. That overhead, plus the fact that LU 6.2 is not yet widely supported on personal computer networks, seems to guarantee that Netbios will be around for a while.

But does that also mean that Netbios-compatible products would not find a subnet to run on in a few years? Probably not. It is more likely that network companies will follow IBM's lead again and support both standards within the same network products. (IBM supports both Netbios and LU 6.2 on the Token Ring adapter card.)

The presentation layer

One step above the subnet is another important network-to-application interface: the presentation layer, which is Layer 6 in the OSI model. Some applications should interface at the subnet level; however, the vast majority of software applications should interface at the presentation layer.

In personal computer networking, MS-Dos 3.1 now defines the presentation layer. MS-Dos 3.1 is the first version of MS-Dos to contain networking primitives for file and record locking. Applications cannot lock a resource directly; they must request that service from the network OS. Because of the Dos pre-eminence in the micro world, these networking primitives became the de facto standard network-to-application interface.


How IBM's PC Network maps to OSI relationships

When Dos 3.1 was introduced, virtually every major network company agreed to support the new standard. Any network that supports MS-Dos 3.1 can run any software application that also supports MS-Dos 3.1. This greatly reduces the number of software versions a developer must write and support. That, in turn, lowers development costs and encourages the development of new products.

Applications level standards

Up through the presentation level, standardisation is working well, although with a few hiccups here and there. At the application level, Layer 7 of the OSI model, however, the industry has far to go before real standards appear. This is the area where users will see the greatest unwillingness among vendors to support non-proprietary protocols.

This uppermost level is where the application-to-application interface must be built. Because it allows the passing of documents from one environment to another, standardisation at this level is an absolute necessity to make electronic mail truly universal.

Today, the common way to pass a document is to convert it to Ascii and ship it to the new environment. Sometimes it seems just as useful to ship a can of alphabet soup instead. The Ascii translation loses all of the document's formatting codes, and that can mean the loss or alteration of much of the document's meaning. In addition, reformatting is often a laborious task.

Eventually, the completed OSI protocols will include a solution for standardisation at the application level. Office document architecture (Oda) and office document interchange format (Odif) are in the final stages of preparation as draft standards.

DCA is part of the SNA Disoss protocol. Widespread Disoss or DCA support has been slow in coming and may never occur. However, DCA contains a formatting protocol called Revisable Form that many software vendors are accepting.

These formatting protocols permit the movement of documents from one environment to another without the loss of formatting information.

Fortunately, standardisation is not an all-or-nothing situation. Looking at all levels of the communications process, the currently available standards answer many of our needs: hardware independence, internetwork capability and a standard application-to-network interface. Most importantly, the direction of standardisation is clear enough to let users do long-range systems planning.

- *Michael Durr writes for Communications World's US sister publication Network World.*

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ATMs a headache for IBM

Customers fuming in front of "out of service" Commonwealth Bank teller machines may not care about the ins and outs of software and hardware, but they are not alone in lashing out at lack of service. Paul Korzeniowski, senior writer with our US sister publication Network World, attempts to throw some light on the subject.

AUTOMATED teller machine (ATM) networks are causing some big headaches for IBM. US analysts report that in users' evaluations of processors for networking ATMs, IBM systems are being beaten in as many as four of five cases by products from Tandem Computers.

The task of ensuring ATM nets remain up and running at all times is proving a difficult one for IBM. ATM networks require lightning-quick response times and 100 per cent uptime. Tandem manufactures a line of fault-tolerant processors, which are systems equipped with redundant components. For example, if the CPU breaks down, the device will switch to the spare CPU.

The products' redundant capabilties are a key selling point at companies with ATM networks. "We do not want our network to be down at all," said Steven VanFleet, vice-president of operations at Financial Interchange, in Houston. "From time to time, an IBM mainframe will go down."

In June, the company, which processes four million transactions a month, chose a Tandem system for its network and plans to migrate from an IBM 3081 mainframe to the new system by the second quarter of next year.

In addition to its products' features. Tandem is carving out a healthy niche in the ATM market because relatively few companies — less than half a dozen — compete against each other.

One of those vendors is IBM, which offers users three alternatives. ATM software can be run on an IBM mainframe, but this strategy leaves users without much-needed redundancy capabilities.

The company also offers its Transaction Processing Facility (TPF) software, which was developed for the airline industry in the early 1970s. A couple of years ago, IBM fine-tuned the product and began offering it to a broader range of users, with financial institutions a key target.

Even though TPF is good at handling large volumes of transactions, users are hampered by its complexity.

"Companies have a difficult time finding qualified personnel to run a TPF network," said David Passmore, group manager at Network Strategies, a consulting company. Because TPF runs only on an IBM mainframe, the product is also expensive.

IBM's third alternative, the System 88 fault-tolerant processor, is manufactured by Tandem's chief competitor, Stratus Computer. A main problem with this device is that it does not run the most popular ATM software. AO Smith Data Systems makes software that runs on an IBM mainframe or a Tandem system. The company does not yet offer a version for the Stratus system.

Concurrent Computer (Perkin-Elmer) and NCR also make hardware designed to handle ATM transactions. Concurrent's offering does not handle large volumes of transactions well. NCR's products are untested because they are recent announcements, according to Passmore.

Despite Tandem's growing momentum, it has not been a clear-cut winner for every ATM network. Since 1981, First City Bank of Texas in Houston has been using an IBM mainframe and software from AO Smith to run its ATM network.

The company has gradually tuned its network so that it overcame IBM's biggest bugaboo. "We have enhanced our network so that it stays up and running 99.5 per cent of the time," said Louis Ivey, senior vice-president at the bank, which processes more than 4.5 million transactions per month.

Tandem devices can be run in conjunction with IBM mainframes and TPF, and many large banks use both Tandem systems and IBM's TPF. In this type of configuration, the Tandem system cannot perform sophisticated routing capabilities.

Running in an IBM Systems Network Architecture network, a Tandem Nonstop system has to be designated as a Physical Unit 2.0 device, a designation typically reserved for unsophisticated network devices such as an IBM 3274 controller.

To perform sophisticated routing functions, a device would have to act like a Physical Unit 5.0 device — for example, an IBM frontend processor. Tandem has told some of its large customers that it will overcome this obstacle next year.

Meanwhile, IBM is expected to enhance its offerings and make them more palatable to financial organisations. "Tandem seems to be ahead of the pack right now," said David Fenstemaker, vice-president at First Interstate Services, a bank in Irvine, California.

"But once IBM puts all its pieces in place, such as LU 6.2, it may be able to regain the lead in the ATM market."

Teller machines . . . a software bottleneck?

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TRADE ENQUIRIES WELCOME

Systems integration plays key role in DCA merger

CW International News Service

NETWORK management has been a dominant theme at many of this year's communications trade shows and cropped up again prominently at the recent US Telecommunications Association's annual conference in San Diego.

Digital Communications Associates and Cohesive Network Corp announcing their merger, noted that integrating the two companies' network management systems had played a key role in the deal.

A low-level interface demonstrated at TCA allowed users to call up Cohesive's network management system on a window of DCA's network management workstation. The two companies are already working towards higher level integration of the two systems, which would let users manage both sets of networking products from one workstation and one database, a DCA spokesman said.

"We're in the process of rewriting the network management system entirely, so you can run it on a range of systems, from a personal computer up to a Vax, and add features in a modular fashion," he said.

Both DCA and Cohesive indicated that they have already begun working on interfaces with IBM's Netview network management system, although no time frame for availability was announced.

DCA also announced the Digital Packet Exchange (DPX) family of CCITT X.25 packet assembler/disassemblers.

The DPX-100 connects up to 64 asynchronous devices to a packet-switched network service or DCA communications processor at speeds up to 19.2K-bit/sec. It will be available in the US at $US5190 in November. The DPX 2100, which supports 80 asynchronous devices, is priced at $US5790 and will be available in January.

Other network control and management-related announcements made at TCA include:

■ Data Switch Corp introduced Model 3225 of its Intellinet series of network performance measurement systems. Designed to measure performance for very large IBM Systems Network Architecture (SNA) networks with thousands of distributed devices, the 3225 monitors each network device, application and transaction and displays trouble spots as coded graphics, the company said. It is available now in the US.

Data Switch also announced protocol monitoring for X.25 networks and the International Passenger/Programmed Airlines Reservation System/ALC (IPARS/ALC) airline reservation systems.

■ Lee Data Corp unveiled the T1 Communications Processor Model 525, which gives users of Lee Data remote SNA controllers and terminals the ability to communicate with a host processor at 1.54M-bit/sec speeds.

The Model 550 Interface Expander, also introduced at TCA, enables up to four Lee Data remote controllers to be connected to one 1.54M-bit/sec line. Both products will be available later this year.

Lee Data also announced X.25 support for its Series 300 3270 controller and Series 400 3270/asynchronous controller.

Microstuf and DCA merging

AGGRESSIVELY expanding US comms vendor Digital Communications Associates (DCA) is to merge with Microstuf, maker of microcomputer data communications software such as Crosstalk, in a $US15 million deal.

The acquisition is "all part and parcel of DCA's thrust to position itself as a major mainstream supplier of a full family of data communications products, especially microcomputer products," according to one industry analyst, Andy Schopick of Gartner Securities. The company is best known for its Irma terminal emulation board, but DCA's real specialties are in software.

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Because of expert training, Rover can be used as a line concentrator, message switching node, port expander, device controller, protocol converter, terminal security handler, all from the one box – the central command trick again.

The end to end connection resulting from the integration of a network using Rover means that in most cases, the system will enable any make of terminal to talk to any make of host and even give you a complete 'anymake' host to host data transfer ability.

Rover will even quietly softload upgrade and is fully trained to understand SNA, or X.25. In fact Rover can communicate with any computer network, and teach them all our new tricks, for very little bickies.

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Board set up to help 'embryonic' space industry

By Luis Huesch

THE Federal government, perhaps not caring to be observed seeing eye-to-eye with Queensland Premier Joh Bjelke-Petersen on the importance of indigenous space efforts, has set up an Australian Space Board, but stopped short of making it a statutory authority.

The government also rejected a recommendation that it should spend up to $A100 million in the next five years on space projects with significant Australian design and construction content, associated basic research and appropriate support facilities.

But it noted that even with "limited and fragmented domestic research", "limited local design skills", and "lack of experience and knowledge of wider market opportunities", Australia's present space industries turnover is now $A45 million a year.

The rejection of recommendation 14 of the Madigan Report on Australian space policy was wrapped with a label stating "supported subject to financial constraints".

Under this heading, the government proceeded to explain that "the proposed level of funding is seen to be high, especially if viewed only as an industry subsidy to gain a greater share of the direct space market.

The government added: "The recommendation is supported in principle, noting that the current situation of budget restraint and the embryonic state of Australia's space industry necessitate lesser levels of funding in the earlier years of the program, and may not permit the long-term commitment which the report proposed."

Because of the "substantial commitment" implied in the report's recommendation for a statutory space authority, the government rejected this and instead opted for an interim, non-statutory solution.

Technology minister John Button and Science minister Barry Jones said in a prepared statement that the government "supports . . . in principle" a recommendation to set up a statutory authority to pull together all of Australia's space efforts. But we believe the magnitude of Australia's current space involvement does not yet warrant such a body.

"Accordingly, an Australian Space Board will be formed for the time being as a non-statutory body," the ministers said.

Senator Button (left) and technology minister Barry Jones . . . joint statement.

In a policy statement responding to the Madigan Report of June 1985, the ministers agreed with the report on the need for an active space program. The report, by a working party from the Academy of Technological Sciences chaired by Sir Russell Madigan, was commissioned in 1984.

"Australia's geographic position, size and natural resources — both on and offshore — guarantee we will be a major user of space technology," they said.

"This provides us with an opportunity to develop a local industry with potential for sales in the world market. The leading-edge technologies used in such a space program will have an important leavening effect on Australian industry."

Hence establishment of the five-member Space Board, which is to oversee the spending of the $A5.25 million allotted to space programs in the Budget and to advise the government on research and development priorities.

Its creation stems partly from the government's desire "as a major user of space services to more directly influence the design, development and delivery of the relevant technologies," according to the ministers' policy statement.

The board, which is to report directly to Senator Button, is to be chaired by OTC chairman Bob Somervaille. Other members are I Bettison, director of Codan Pty Ltd; Professor J H Carver, director of the Australian National University's Research School of Physical Sciences; Dr K G McCracken, director of the Csiro Office of Space Science and Applications; R Wheeldon, joint managing director of BWD Industries; and Dr A H Hayman, Senator Button's principal adviser.

Observers will be invited from other departments, including Science, Communications, and Resources and Energy. Experts are to be co-opted from Aussat, OTC and bodies with independent space activities. The statement noted coyly that "liaison with bodies in the Defence portfolio is also possible."

The board's terms of reference, apart from supervising and accounting for the spending of space program funds and advising the government on R&D priorities, include:

- ■ Acting as a focal point for domestic and international contact on space industry development activities and liaison with overseas agencies.
- ■ Liaising with local research institutions, industry and user groups to establish Australia's long-term space needs.
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Neax shrinks the West

(Continued from page 1)

nical discussions that led to the contract — invited nine major suppliers to tender for the replacement system. The brief was simple but stringent:use the most advanced technology and get optimum results while spending as little as possible.

No-one would say if, how or by how much Telecom outbid Neax maker NEC, but Minenco's Hurley may have been alluding to one crucial consideration when he commented on Telecom's "commercially attractive" proposal. The company, he said, had "had an eye to Telecom's future vital role in regulation and maintenance."

Telecom is more sanguine about its sales success with Hamersley: in its Business Communications newsletter it quotes an unnamed senior executive as saying that "we felt we were in with a good chance for the contract because we have experience of conditions generally in the Pilbara, and of Hamersley's operations in particular.

"Telecom has hands-on experience with a product now nearing the peak of its cycle, and with the integration of telecommunications and computer technology. And of course we have a permanent presence in Western Australia."

Whatever the implications of that statement, there is no doubt that Hamersley is getting a good system. "No one in Australia has a network like it," enthused Hurley in the Telecom newsletter.

Voice capacity alone has been doubled to cater for the 4000-odd widely dispersed employees, whose extensions are maintained in a central "electronic directory". Automatic call transfer, call back and call diversion are provided.

Hamersley will be able to do its own extension reconfiguration from a so-called customer administration terminal. Remote polling call accounting is part of the system, costing trunk calls to departments or even individual employees.

Digital handsets can be integrated with personal computers and, at a later stage, facsimile machines. VHF telephones also can be connected as required.

Said one of the consultants involved: "it has data switching, and it works. I have seen it!".

Rivals vie for world networks

CW International News Service

JAPANESE and UK companies are about to launch a $US780 million all-cable alternative international telecommunications venture — rivalling a satellite-plus-cable venture in the fight against the current monopoly provider.

Announcing the move C Itoh said it has teamed up with Toyota and the UK's Cable and Wireless to set up International Digital Communications Planning (IDCP), a research company aiming to offer overseas telecommunications services, IDCP is scheduled to begin operating in Tokyo early in November.

The joint venture, capitalised at $US2 million, will also be joined by two US companies, Pacific Telesis International and Merrill Lynch & Co, and Fujitsu, NEC and Hitachi.

IDCP is scheduled to develop into a service company by around 1990, using Cable & Wireless' existing network between Hong Kong and London, as well as the optical fibre cables C&W is constructing in the Atlantic and in North America.

The joint venture was conceived as an offensive against Kokusai Denshi Denwa (KDD), which has held the monopoly on Japan's overseas telecom market.

Earlier, a group of eight Japanese companies — including Matsushita, Mitsubishi and Mitsui — joined forces in a similar venture, called International Telecom Japan.

ITJ's planned overseas telecom services include telephone, facsimile, data communications and image transmission via Intelsat (International Telecommunications Satellite Organisation) satellites and ocean cables. Rivalling the Anglo-Japanese consortium, ITJ will enter the service business in early 1988.

C&W and Pacific Telesis International will hold a combined 23 per cent of IDCP, but management control will be held by the Japanese partners, with C. Itoh holding 20 per cent and Toyota holding a 10 per cent share. General Motors, earlier rumored to be a partner, has decided to become a user of the new venture.

MCI looks to space for global high-speed communications

By Elisabeth Horwitt

MCI Communications says it will set up dual satellite and optical-fibre links around the globe — complete with "early bird" discounts — in a bid to snare international companies with a need for reliable, high-speed communications.

Provided jointly with overseas carriers, such as Australia's Overseas Telecommunications Commission and British Telecom, the network is geared to "international brokerage companies and other companies that need high-speed, reliable communications with branches overseas," said Steven Mott, MCI's international vice-president of sales and marketing, at the recent Telecommunications Association's annual conference.

The first overseas leg of the network will be a satellite-based link via Intelsat Business Service and TAT-8 fibre-optic trans-Atlantic cable, slated for delivery in July 1988.

MCI announced pricing for its TAT-8 facilities at $A9200 per month for 56K-bit/sec or 64K-bit/sec links, and $A100,000 for a 1.54M-bit/sec link. Customers who sign up before the end of the year will receive a 10 per cent discount.

Through agreements with BT and the French PTT, MCI provides satellite links to Japan. This is the only part of the network that does not include a fibre-optic link. The network will then extend, via satellite and optical fibre, from Japan to Hawaii and across to the West Coast of the US. The Japan-US satellite link should be operational by December, MCI said.

BT's users protest at price jump

BUSINESS users in the UK are up in arms about price rises of up to 45 per cent from British Telecom and have asked the government's regulatory agency Oftel to stop BT under monopolies legislation.

Connection charges, private lines and local rates are all slated to rise on November 1, some up to 45 per cent, according to the UK Telecommunications Users Association.

Oftel boss, Professor Carlsberg has been asked to investigate the price increases and to enlist the help of the UK Monopolies Commission to prevent what BT claims is merely a rebalancing of charges.

Users say BT is taking advantage of its remaining monopoly on local calls and installations to increase profits beyond what the government permitted (retail price index minus 3 per cent) when BT was privatised.

The only users likely to benefit from the price hikes are the about 200 members of the so-called "information circle". Professor Carlsberg says he will investigate the alternative tariff offered to large users that "will have the effect of giving a discount to BT's biggest customers". He aims to ensure that large customers are not subsidised by the smaller business users.

BT has claimed that overall local charges will not increase as most calls are made in the cheap rate period. Professor Carlsberg disagrees: "Business customers will experience a sharp increase if most of their calls are at peak rates."

The new charges are BT's first increase in 12 months, and BT says they are fair and balanced.

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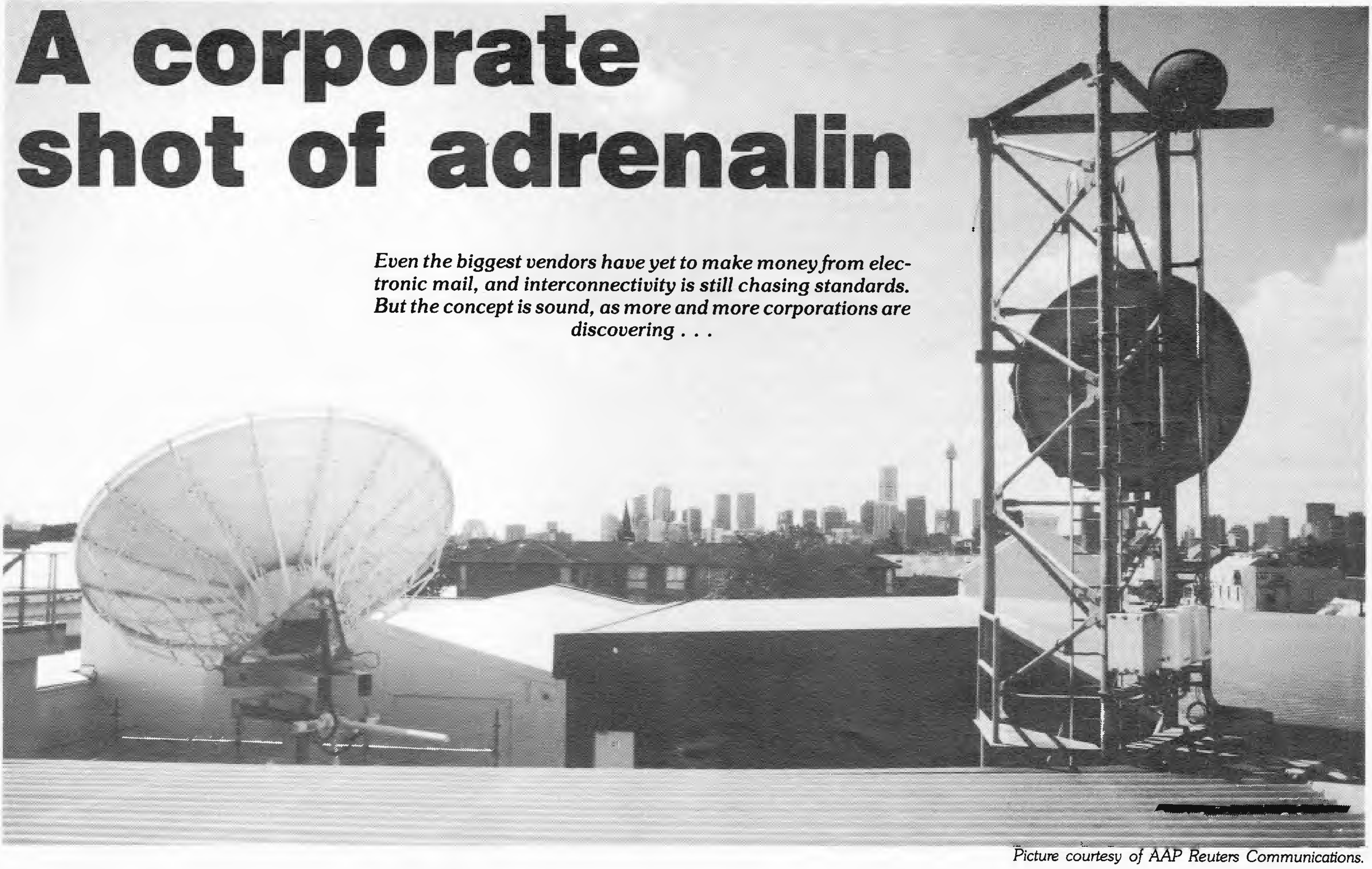
A corporate shot of adrenalin

Even the biggest vendors have yet to make money from electronic mail, and interconnectivity is still chasing standards. But the concept is sound, as more and more corporations are discovering . . .



Picture courtesy of AAP Reuters Communications.

By John Connell

ELECTRONIC mail is one of the most productive applications of technology in the office. That may be surprising, because most of the publicity about machine applications goes to personal computers. But the benefits of micros tend to be ad hoc, and apply only to a specific individual or area.

E-mail, an application of technology that pervades many aspects of business operations, is leading to dramatic changes in corporate culture.

Corporate culture comprises the attitudes and practices that have developed in carrying out an organisation's mission. Because communications is the lifeblood of an organisation, communications tools and their methods of use are at the heart of corporate culture.

E-mail is a communications tool that moves messages over a telecommunications network. Input and output of messages are via a terminal with a screen and keyboard. Increasingly, the terminal is a personal computer. The e-mail system is managed by a minicomputer, network server or mainframe, and in a growing number of cases the system is used to download information from mainframes through minicomputers to personal computers, and to send processed information back.

The most common rationale for e-mail is to eliminate "telephone tag". Most people know the frustration of not getting through to a called party, and the subsequent exchange of messages. Equally frustrating is the inability to deliver a coherent message through a third party.

The allure of e-mail is that it allows the user to deliver messages directly and receive replies at a time and place of his or her choice.

In companies where internal correspondence is formally structured, telephone tag suspends action because the manager must contact a number of people before a decision is made. If one of those people is not available by telephone, the action is put on hold.

Furthermore, once contact is made, the manager must resurrect the train of thought that led to the question in the first place. The corporate communications pattern that develops is slow-moving and disjointed.

Companywide e-mail systems cross departmental lines and smooth out communication patterns. But to have a significant impact on an organisation, they require a sufficient number of terminals and users to assure a consistently high level of traffic over the system. The most successful systems are those that are installed from the top down and have the full support of senior management.

Implementation of e-mail can be a shot of adrenalin to corporate culture. Users find they can enter messages and get responses within hours and they can check their mailboxes frequently, regardless of where they

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A shot of adrenalin

are within the corporate facilities. The impact is that responsiveness supplants inertia, and problem solving becomes quicker and more cohesive.

A second impact of e-mail systems on corporate culture comes from the changes that occur in communication patterns. E-mail systems challenge the adequacy of rigidly structured job definitions in a world of changing business requirements.

As an example, a company assigned all responsibility for handling customer problems to its marketing department. One day, a marketing manager, who was frustrated by his inability to solve a particular customer problem, used the e-mail's broadcast capability to ask for assistance from all those on the system. An engineer, whom the marketing manager had never met, responded over the system and suggested a solution. Thus, a new communication pattern was born.

After that, the marketing people began to solicit the ideas of the engineering staff to solve difficult customer problems. Eventually, the company changed the organisational relationship between marketing and engineering so that responsibility for handling customer complaints was shared.

This is just one example of how e-mail changed communication patterns and subsequently led to a re-assignment of responsibilities.

A third impact of e-mail on corporate culture is that it allows employees to see the flow of information within the corporation. Over the years, corporations have developed organisational hierarchies. Information is gathered at one level, passed on to the next level and continues along the line.

New vistas

With e-mail, information is available at all levels simultaneously. Users begin to question if it is worth the delay to have the data pass through all these channels.

Such questions often eliminate some of these levels and promote more efficient methods of communication. Once again, changes in organisation cannot be predicted. They come from users who find that the system can streamline operations.

The fourth impact of e-mail systems on corporate culture is that a company using such a system is perceived as being attuned to the times. Internally, e-mail systems are the entry point into the world of network-based systems — the heart of all modern information processing. Once exposed to such systems, new vistas open up for improving the way to do the job.

Externally, a company that offers its customers access to its e-mail system for handling direct communications presents an image of enhanced customer service and responsiveness. A current thrust in business is to use information technology as a competitive tool. Managers would be hard-pressed to find an application as powerful in responding to customers' needs.

Improving responsiveness, changing communications patterns, streamlining information flows and modernising the internal and external corporate image — these are but four of the changes in corporate culture that can result by using e-mail.

The benefits of e-mail are ongoing. System users are continually coming up with new ideas and new approaches to help improve corporate performance.

The ultimate benefit of e-mail may well be an unleashing of creative thinking throughout the work force.

• John Connell is executive director of Office Technology Research Group.

INTROVERTS VERSUS EXTROVERTS

-- ELECTRONIC MAIL SYSTEMS ARE THE BATTLEGROUNDS --

ELECTRONIC MAIL SYSTEM FEATURE	APPEALS TO		COMMENT
	INTROVERTS	EXTROVERTS	
LOG IN	X		FEELING OF BELONGING
LOG OUT		X	ASSERTIVE INDIVIDUALISM
TELEX DISPATCH		X	INTROVERTS HATE TELEX
CARBON COPY	X		INTIMIDATE RECIPIENT
ELECTRONIC AIRLINE INFORMATION		X	INTROVERTS HATE TO TRAVEL
CREATE LIST	X		SEE CARBON COPY
HELP	X		EXTROVERTS NEVER NEED HELP
COURIER DISPATCH	X		FACE-TO-FACE INTIMIDATION
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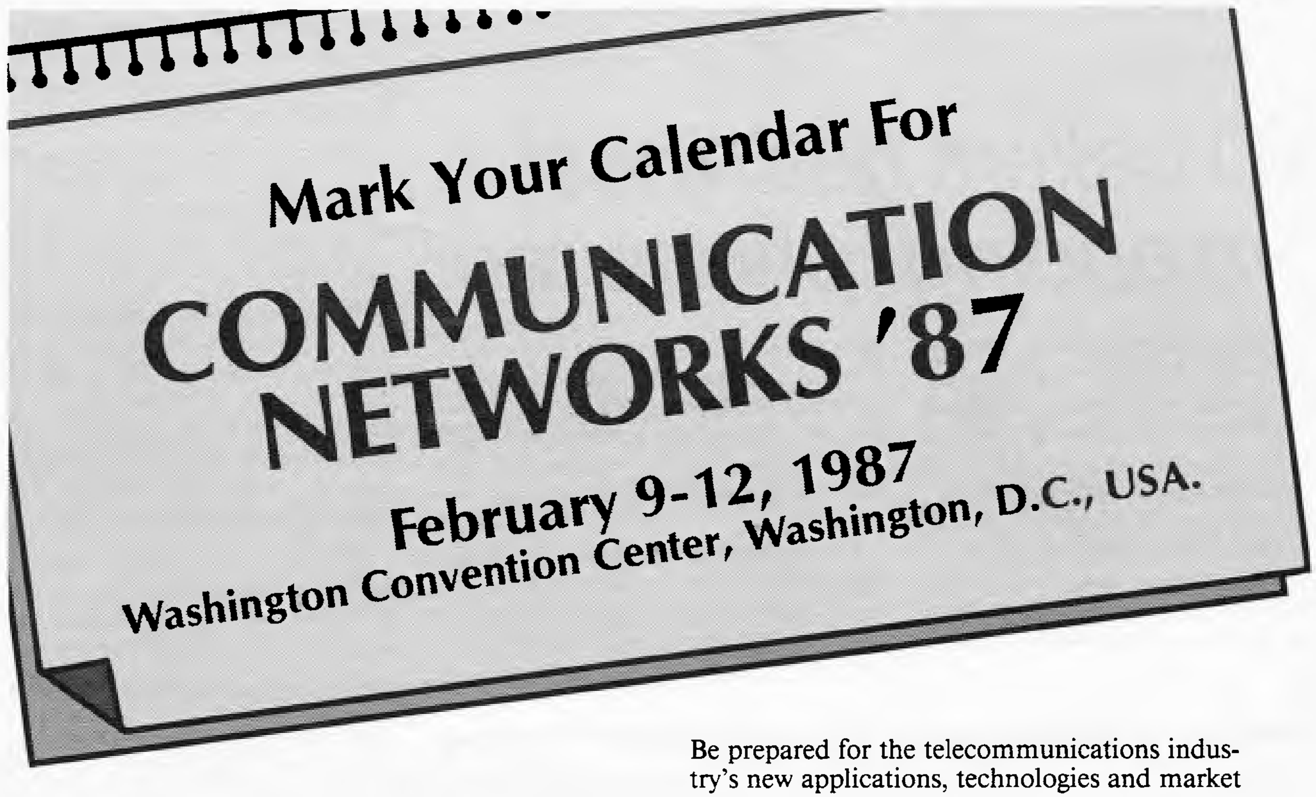
(SOURCE: INTERNATIONAL RESOURCE DEVELOPMENT INC.)

Who's behind all this bumf?

ONCE upon a time the success of the businessman or diplomat depended on his ability to communicate in writing, an introvert skill requiring carefully honed and precisely aimed prose. The advent of the telephone gave another class of communicator, the extroverts, the edge.

But the new electronic mail services have come to the rescue of the introvert, said International Resource Development in an only seemingly facetious introduction to a 222-page report on e-mail issues.

"Just as in the early days of the Xerox machine, when sneaky executives learned to bombard their managers and colleagues with copies of their memos, so too are the same sneaks using the 'copy' and 'broadcast' features of today's electronic mail systems to blanket their organisations in electronic bumf," said IRD researcher Jean Buffham.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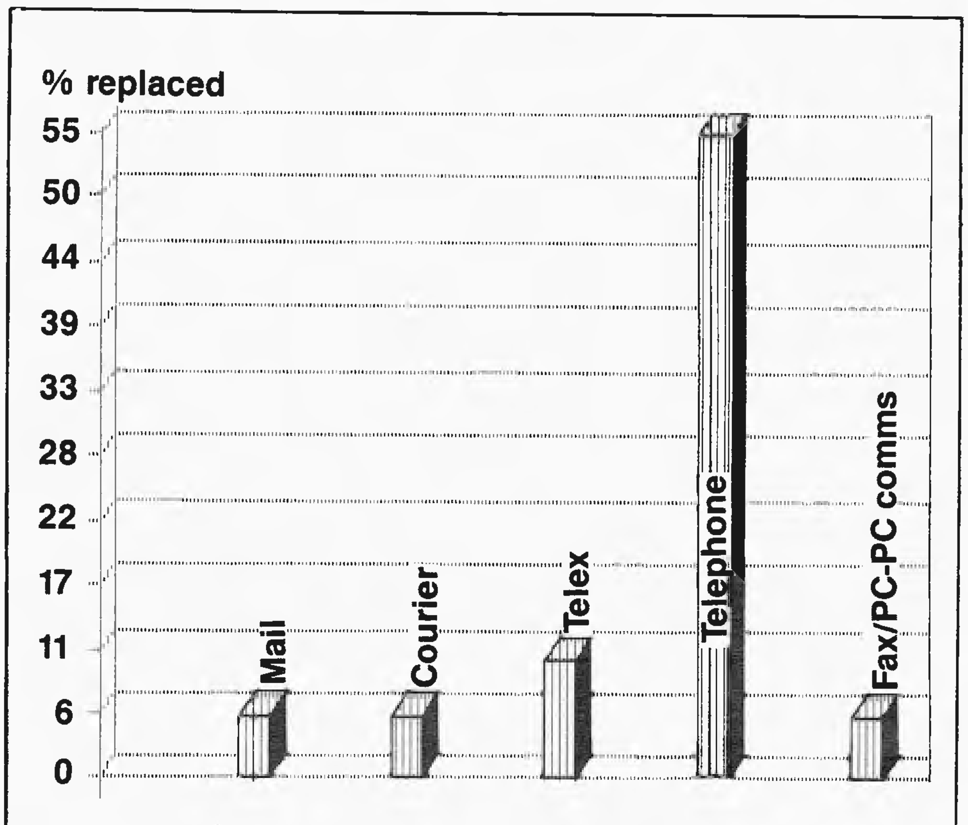

Chart shows how electronic mail will affect other services.

STD callers gain most from ending 'phone tag'

LONG-DISTANCE telephone services stand to lose the most from the inroads of electronic messaging services, according to industry observers who predict that four out of five electronic mail messages would otherwise have used another medium.

Only one in five messages would truly represent new traffic not identifiably diverted from other services, said Eric Arnum, editor of *Electronic Messaging and Micro Systems (Emms),* a bi-weekly US newsletter tracking the electronic mail market.

In an analysis of the cross-elasticity of electronic messaging traffic. *Emms* argued that up to 55 per cent of long-distance calls will be replaced by the cheaper and more effective medium of electronic mail (see diagram).

Among the key benefits claimed to bring about this switch is the fact that executives. can avoid the tedious and costly game of interstate "telephone tag".

E-mail shapes as carrier business

By Luis Huesch

ELECTRONIC mail, though slow in coming, is shaping up as a major business for carriers like US alternate network MCI as corporations scramble for new internal communications channels.

And according to MCI chairman William McGowan, many worldwide businesses are already seeking to interconnect existing messaging systems with outside networks. Asked about recent optimistic US forecasts for electronic messaging services, McGowan said electronic mail had been "slow to happen" but it was now a big part of MCI.

"Every month it increases, every month we get new customers. We are starting to do a lot of work with corporations now. Our system, for example, is being adopted by DuPont worldwide. We installed worldwide their internal mail system, but it is really our system."

MCI was also connecting existing corporate electronic mail systems to outside systems. Electronic mail was going to be "major business in the future" for MCI, said McGowan.

To illustrate the benefits of electronic mail, McGowan said: "Internally, we could not run the business without it. Internally, we have up to 350,000 messages a month inside our company. It turned out — our people are younger, we operate from terminals — it turned out that it is the major way we have a communication."

MCI, he said, not only uses electronic mail for sending messages to individual mail boxes or mailing lists, but it has a variety of special interest bulletin boards installed to which staff with the proper authorisation has access rights.

One of the problems with electronic mail was that it was "pretty restricted; it is dumped into your mailbox — and a lot of times people say 'I want to have access to it but I do not want to have it forced on me'."

He would get some 20 to 30 electronic mail messages a day, and much of it he forwarded without even reading it. But this was where the special bulletin boards came into their own. He, for instance, would go into one that detailed activities in the US regulatory area, and he could then query it, for example, for what had happened in California in the past month.

Database access

"It is kind of an electronic mail system but it is not electronic mail; it is database access but it is done in the electronic mail environment," McGowan said. "We use the same terminals, the same database access codes, but it is an easier way to do it. And now that has been so successful in our shop we have made it available outside, as part of the system," he said.

McGowan did not expect facsimile to pose a strong challenge to electronic mail because such a vast amount of information was originated electronically, on electronic typewriters, word processors and PCs.

"Once something is originated electronically, captured electronically, there is nothing better, no less expensive way than to transmit it, store it, massage it electronically rather than in a physical format such as facsimile."

AAP-Reuter offshoot moves further into voice messaging

AAP-Reuters Communications has branched out further into the value-added services field, offering voice mail boxes on the Aspen messaging system it also sells to corporations.

It has also struck a deal with DTE Telemessenger of the US for reciptrocal "guest mailbox" privileges for visiting businesspeople — a service that could develop into full interworking of both systems, with messages zipped back and forth across the Pacific at less than the cost of an international call, according to the company.

GTE has similar agreements with other countries on the Pacific rim, and sees voice messaging as having "the potential for becoming the preferred international communications medium for exchanging information in the near future".

The new AAP service bureau brings the benefits of store-and-forward voice messaging to smaller users, who can now rent a standard Aspen voice mail box for $A50/month, including up to two hours of connect time.

Users can record messages of up to five minutes long, and may have up to 30 messages in their mailbox on the Aspen hard disk at any time. New messges are kept for seven days; messages expressly "saved" by the user are kept for 30 days before being automatically erased.

It was only offered in Sydney initially, but the company expects to extend the service to provide local-call access for all major capital cities.

New competition

Switch maker Northern Telecom is teaming up with value-added network services (Vans) such as Electronic Data Systems (EDS) in the US to compete against local telephone companies — by helping the Vans to set up telecommunications management services.

Under NT's Telecommunications Facilities Management (TFM) program, companies such as EDS, distributors and selected large accounts will buy its equipment to rent to users as part of a package that includes ongoing maintenance, support and management.

Rolm system here

IBM Australia has announced local availability of Rolm's Phonemail voice messaging system, suitable for integration with the Rolm CBX slated to come from IBM's Wangaratta, Vic, plant later this year.

The messaging system starts with a four-channel module supporting 40 to 80 subscribers with 10 hours of message storage. Configuration options range up to a 16-channel system for up to 3000 users and 49 hours of storage.

Phonemail can be integrated into IBM's Profs (professional office system) office automation product via a VM host link.

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Smoke signal old hat. World Letter heap better.

OTC branches out — quietly

By Luis Huesch

SYDNEY — The Overseas Telecommunications Commission has branched out quietly once more, this time bent on becoming the "mailman" for telex subscribers who want to send a message to non-subscribers anywhere in the world.

As with its foray into the telex arena through Minerva, the OTC's new Telex Word Letter service includes Australia. But this time the OTC has been more circumspect: arrangements are being made with Australia Post to have incoming telex letters delivered via APO laser facilities in Melbourne.

Launched without much fanfare, Telex World Letter is offered in conjunction with MCI. And according to some knowledgeable people in the information-carrying business, Australia has become the best user of the worldwide service.

Tied together by MCI Mail, Telex World Letter lets telex subscribers send a message which gets printed out on a laser printer at the distant end and can then be mailed, or even hand delivered.

MCI chief executive William McGowan recently commended OTC, saying that "their idea, which is a good one, is that there is a major universe here of telex users — a good natural market for them to say that 'not only will you be able to talk to any telex machine in the world, you can talk to anybody else in the world'."

OTC's Minerva is tied into the system too, said McGowan: "that is the whole essence of it, everything is tied into MCI Mail".

So in theory, a Minerva subscriber can reach telex subscribers, non-telex subscribers, MCI Mail subscribers (plus 200,000 Compuserve subscribers), as well as Dow Jones with all their databases.

MCI's laser printers produce the hard copy in the US and Europe. Arrangements have been made with the Belgium Post Office to print out and distribute throughout Europe written messages for people without terminals.

Does it work? Our secretary yelped with delight at the simplicity of the procedure, replete with prompts for the novice if desired. Why had we not told her before of this wonderful new thing? Well, OTC of whom we are a major client, had neglected to tell us about it.*

How does it work? I do not know why for these past few years I should have been doing OTC's onerous marketing for nix (in fact they keep sending me reminders all the time that my private Minerva account is 60c in the red. They do not even advertise with us). But here goes:

To send a Telex World Letter from the company telex machine, the operator calls 020 (the international telex). Upon receiving the GA (go-ahead), he/she keys in the number 236 66 400+ which is the MCI access code.

Western Union

The machine will echo back the letters WUI (which stand for Western Union International, a telex outfit Western Union hived off as a standalone company sometime in US pre-deregulatory comms history, and which was later bought up by MCI, thus making it a full-service carrier).

It then asks if the user requires prompts, and, if such are required, proceeds to take addressing details and so on line by prompted line.

Secretaries will love it. Companies will wonder how they did without it. Sending telexes to non-telex subscribers . . . what will they think of next?

My guess is that they will team up with AAP-Reuters Communications, sell you a little cigar-shaped microwave antenna and neatly tie you into their trans-oceanic system via a bigger antenna on Broadway. And if Aussat sticks to its promise of customer service, you might yet get to send domestic telexes without a telex machine — or going through Telememo.

**After we sent OTC a sneak preview of this piece, its marketing people got their act together with a direct mail campaign and business press ads featuring White Cloud, the happy Indian pictured.*

Host-to-host by Tymnet

USERS of the McDonnell Douglas Tymnet electronic messaging system can build circuits to other network hosts with a new pathway utility built into the recently uploaded version 22 of the Ontyme system software.

Version 22, installed in late September, also incorporates enhancements added in the preceding two releases but not widely documented, including Xmodem support for binary file transfers and a :REPLY command for instant reply to e-mail messages.

Other enhancements written into the Ontyme Pascal code include provision of a new SUBJECT field in the message format, automatic system messages for undeliverable messages to other hosts and an interface facility called X.Ontyme which conforms to the CCITT X.400 messaging standard recommendations.

The interface facility, previously referred to as Reliable Machine Interface, lets software applications, PC frontends or intelligent terminal procedures communicate with Ontyme in a binary, machine-oriented format. Applications can be written on anything from mainframes to PCs, and can exhibit any interface to the user the application author wants to display. They will not, however, communicate directly with Ontyme but trade data with the Ontyme host through the local front-end according to the X.Ontyme protocol.

The vendor says its portable applications language Opal (Ontyme Protocol for Application Links) will ensure user applications are consistent and reliable and will not be affected by future changes to the Ontyme system.

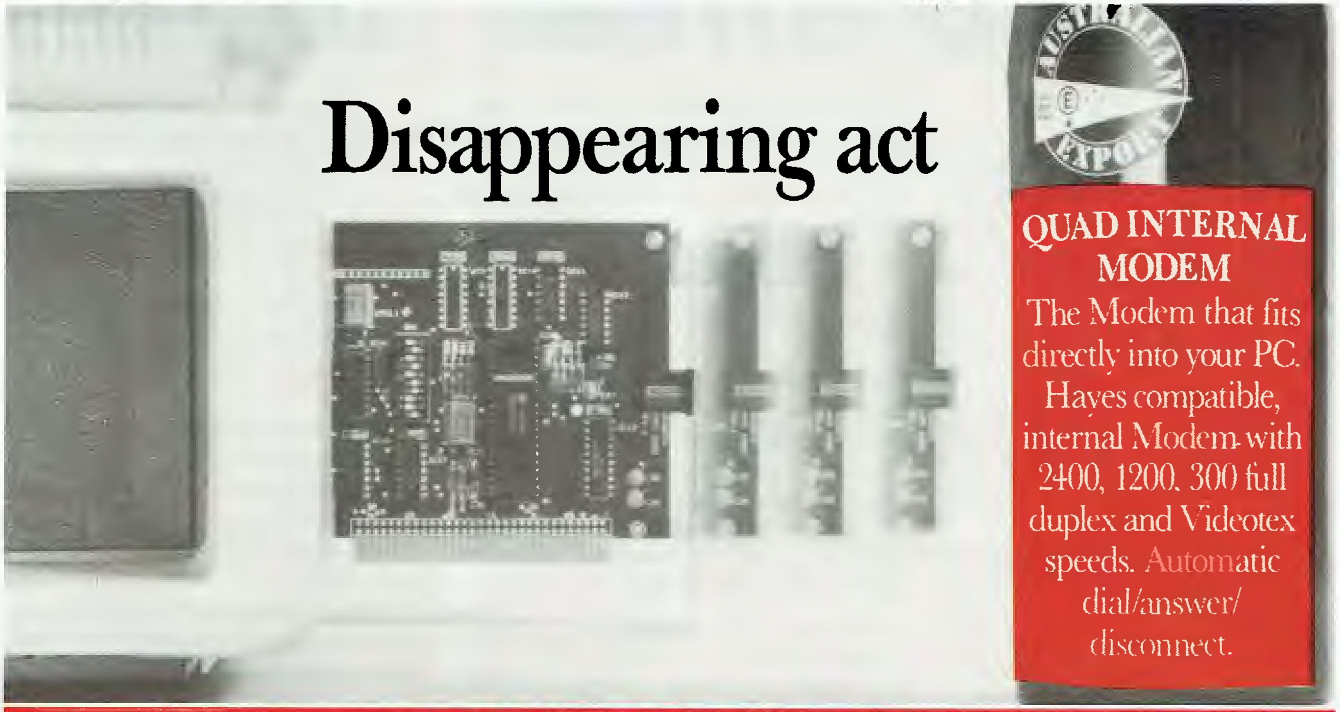
E-mail network designers will be pleased with the new PATHWAY utility that allows circuits to be set up to other network hosts during an Ontyme session. If the host resides on a different network from Ontyme, users are prompted for host name and password as part of the circuit-building request.

Once the circuit is established, the user terminal "hosts" the input/output exchange with the target host. But, in addition, users can direct Ontyme files, messages or workspace contents to the remote host, and direct host responses into their Ontyme workspace.

This allows user file or data transfers between Ontyme and the network host and also permits the user to execute host commands directly.

The various capabilities of the PATHWAY function let network designers build powerful applications via EXEC files to set up user-friendly menu-driven systems for connections to other hosts.

Version 22 enhancements are largely documented in online files. I have downloaded the most important of these, and will make them available free to interested Ontyme users among our readers.



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Zapmail zapped by software failure

By Bob Wallace

US alternative mail carrier Federal Express has ditched its Zapmail facsimile-based document transmission service after losing more than $US317 million since 1984. The company may also scrap an ambitious plan for a 25,000-station Vsat service that was intended to be Zapmail's main delivery vehicle in future.

Industry sources claimed Zapnet, a packet-switched network built to handle Zapmail traffic, was responsible for the failure of the service, on which the company planned to spend $1000 million over 10 years. The network software reportedly was too slow and not designed to handle the volume of traffic necessary to make Zapmail profitable. Federal Express has already begun to dismantle the network, which featured a dozen nodes linked by 56K-bit/sec leased lines.

Re-evaluating

A spokesman said the company was "re-evaluating" its plan to implement what would have been the world's largest very small aperture terminal (Vsat) network. The company had planned to mount Vsats on or near the facilities of users who would frequently use the Zapmail service. The network would require the launch of a Ku-band communications satellite, dubbed Expresstar. Federal Express has not cancelled its contract with Martin Marietta, which recently announced it would launch Expresstar in 1989.

Federal Express chief executive Frederick Smith said the company still hopes to offer a digital transmission service using small earth stations. "Unlike the Zapmail facsimile project, however, we do not plan to put the network out in advance of demand or on a speculative projection of traffic," Smith added.

Vsat's just the ticket for linking up K-Marts

Convinced of the benefits of very small-aperture terminal (Vsat) satellite networks, several large US corporations are moving in fast to build new networks or improve existing one, reports Stanley Gibson.

COMPANIES with widely dispersed locations seeking to slash the costs of leased lines and packet-switched networks and to gain greater control through their own networks are increasingly flocking to Vsat vendors for solutions.

One of the latest to do so is K-Mart Corp, which will be installing some 2000 Vsats in its network after setting out initially to construct an all-data terrestrial packet-switched network. This was to take over dial-up batch transmissions and online credit card authorisation.

The company favored an X.25 packet-switched network. As it received vendor proposals, though, it found that the X.25 packet-switched concept could apply equally well to satellite transmissions, according to Walter Bzdok, senior director of corporate communications and systems reliability for K-Mart.

Once a satellite network was settled on, the company found it could add video to the network at a price of about $US1000 a terminal.

Huge saving

"There was some coolness at first," Bzdok said of corporate response to a private video network. "Now, management wants video before data," he added.

K-Mart, as the biggest Visa and Mastercard accepter worldwide, was able to cost-justify the value of its network on the basis of credit card verification alone, according to Bzdok. The cost of video air time, excluding production cost, will be 75 US cents a minute per store.

Compared with a terrestrial X.25 packet-switched network, K-Mart will save $US100 million over the next 10 years, Bzdok said. The network itself will cost $US55 million to build. Future plans call for adapting the network to handle debit cards and online check authorisation.

While K-Mart's network grew out of a need to transmit data but is now planned to include video, Chrysler Corp built its network for video but may adapt it for data, according to the car maker's communications manager, Peter Hollinshead.

Chrysler's C-band network has been operating for two years, but the expense of building C-band earth stations has limited the company to 24 of them. Chrysler may convert to Ku-band, which will let less expensive earth stations be placed at a greater number of location, including most dealers' premises.

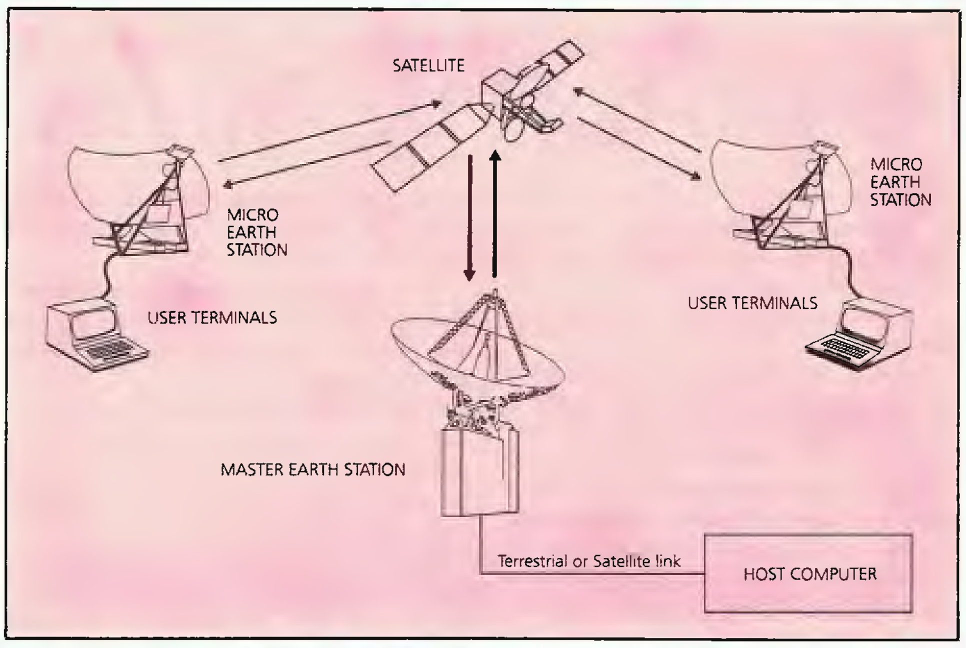
"The impact and immediatly of live TV cannot be beaten, although it will not replace videotape, fax and memos," Hollinshead said. Chrysler uses its network primarily to demonstrate maintenance techniques to service representatives and to train sales representatives, he said.

General Motors Corp's companywide network, now being designed by its EDS subsidiary, will rely greatly on links provided by two corporate satellites, according to Hartmut Burger of EDS. One satellite is scheduled for a 1989 launch and the other will go up in 1990, Burger said.

The satellite transmissions, which will carry voice, data and video, will be part of a corporate communications plan including terrestrial microwave and fibre-optic lines. GM's satellite network will consist of six hubs and thousands of Vsats.

Burger said the number of earth stations could be as high as 100,000 Vsats if the installed cost of a Vsat station can be brought below $US10,000.

● *Stanley Gibson writes for US Computerworld.*



OSI 'no threat' to IBM

By Steve Ireland

SYDNEY — Far from posing a threat to IBM, the current push towards open systems could benefit the giant company rather more than some of its rivals, according to Gartner Group guru Richard Imershein.

Commenting during a recent whirlwind seminar tour of Sydney, Canberra, and Melbourne, the senior vice-president for the US market research group said that IBM is not overly concerned about OSI (open systems interconnection), for two reasons.

First, said Imershein, while IBM's SNA (systems network architecture) has 30,000 customers in place, OSI does not even exist yet ("and God knows when it will"). And second, IBM will simply connect to OSI when the time comes.

In fact, Imershein maintained, OSI could turn out to be more of an IBM opportunity than anything.

"These little vendors want IBM to open up," he said. "But it is a two-edged blade, because it also opens then up to IBM."

One example is the way in which Ascii terminals have been brought under the SNA umbrella.

In passing, Imershein also took a sideswipe at the way the European participants in OSI "farmed out the OSI definitional work to the Japanese: This really gives the Japanese a leg up," he said. "Talk about letting the fox into the chicken house!"

In any case, there is an awful lot of work to be done in both SNA and in OSI, Imershein said.

IBM's Advanced Peer-to-Peer Communications (APPC), a set of rules for application-to-application information transfer at the presentation level, was described by Imershein as a strategic communications interface which will have real implications for rival vendors' prospects and for DP management.

In the recent Burroughs Sperry merger, for example, IBM might be the winner since Sperry mainframe users — worried about their future after the merger — could use APPC (alias LU6.2) to bridge to the IBM world.

APPC will have big implications for network management functions, too, said Imershein. Previously taken care of on the mainframe, these functions will somehow have to be addressed in a peer-to-peer scenario.

Imershein pointed out that although IBM has opened up a large part of the SNA world to outside vendors (for example) through DCA, DIA, SNA/DS, APPC/PC, LU 6.2), it had not done the same with network management.

IBM was anxious to keep network management to itself as a very "closed" function. This, he said, is because it will constitute the "value-added" which IBM requires.

In the battle between token passing networks and ethernet networks, Imershein said there was no clear winner between a 4M-bit/sec ring and a 10M-bit/sec Ethernet, in terms of throughput, predictability, and stability.

Small vendors such as Ungermann-Bass and 3Com had made a serious mistake in immediately jumping on the IBM Token Ring bandwagon. They could not afford to divide their resources in trying to be all things to all people, and should have stuck to their own particular strengths, he said.

Imershein predicted, keeping in mind that network integration software is the real bottleneck in networks, that the burden imposed by Token Ring Networks (TRN) is bound to drive users to "bigger boxes". The IBM PC and PC XT will probably soon be not enough, he suggested, and the PC AT or above will be required.

Richard Imershein . . . "users need bigger boxes".

Imershein cautioned against expecting to buy a Lan with a 15-20-year life. "The life of your Lan is the life of the terminals attached to your Lan," he explained.

Finally, Imershein reiterated the need for strategic communications planning. He said that no-one knows how to manage corporate-wide networks, yet in the near future networks of thousands of terminals will exist, and they must be managed.

'Beware of Lan hype' Sytek boss warns users

By David Legard

SURFERS PARADISE, Qld — Networks have become so significant in the way they distribute information that they are changing the nature of the computer industry, according to Michael Pliner, chief executive officer of US local area network vendor Sytek.

"Information is a company's most valuable asset, and networking will make that information strategic in terms of the company's needs," he said. "People are finding that local area networks are the way to share information and get it out to the users."

Pliner said the network market was the fastest growing area of the computer business, with an annual growth rate of 35 per cent. But he warned there were a number of pitfalls about networks.

"Networks can provide major benefits, but there is a lot of hype around, and people shouldn't believe everything they hear," he said. "And now networks are so significant, they must be properly managed."

Pliner mentioned several issues which senior management should concentrate on when planning and running networks.

These included security, gateways to other networks, network management, and system service and support.

Commitment

But he said management must also make a commitment to keep its company's network architecture moving as the industry came up with new solutions.

And the most important single factor from both the user and vendor point of view was the type and variety of applications which could run on the network.

"Network technology is not the panacea, but enduser services and applications," he said. "We know the hardware technology works, and that the protocols are in place, but there are still very few truly distributed applications that exist. And even though there is a lot of development going on, I think that widespread availability of distributed applications is two years away.

"What users need is distributed project management, distributed database management systems, and better electronic memo and correspondence facilities."

Pliner also raised doubts about the emerging technology of Integrated Services Digital Networks (ISDN).

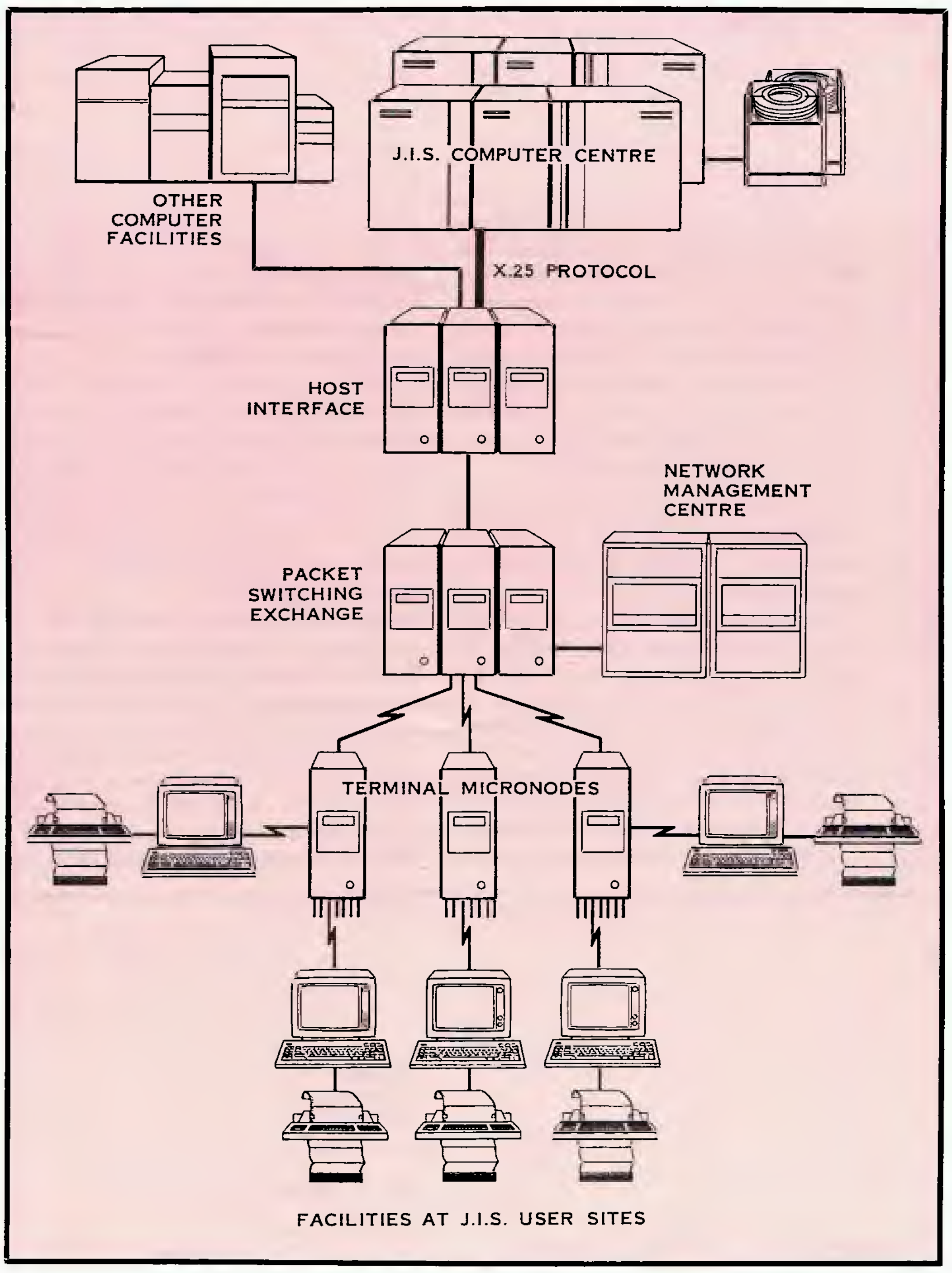
"I'm not sure that ISDN is by itself the method by which the integration of voice, data, and video will happen," he said. "The real issue is how can these different forms of data be handled and integrated at the user workstation, and not how they can be carried over a common medium."

Pliner expects that the number of nodes on local area networks expand into tens of thousands, and that the entry level cost in networking will come down sharply, in the same way as personal computer prices have come down in the past few years.

His own company Sytek, has based its short term strategy on the increasing popularity of personal computers.

"The move from workstations to PCs is definitely happening, and so it is very important for us as a company to be able to help users integrate those PCs into their mainframe computer strategy," he said. "And even though users are moving more into departmental computing with minicomputers, there is a need for them to tie into the corporate network.

Csironet gets the verdict for $A2m justice info system


OTHER COMPUTER FACILITIES
J.I.S. COMPUTER CENTRE
X.25 PROTOCOL
HOST INTERFACE
NETWORK MANAGEMENT CENTRE
PACKET SWITCHING EXCHANGE
TERMINAL MICRONODES
FACILITIES AT J.I.S. USER SITES

The South Australian Justice Information System.

CSIRONET has won its first commercial tender for a packet-switching network using its Micronode communications controllers with a contract to set up South Australia's prestige multi-departmental Justice Information System (JIS).

The $A2 million, 300-terminal JIS, to be completed by the end of next year, uses Telecom leased lines or direct connections to link more than 180 locations throughout the State. The SA government expects to save $A24 million in the first six years of operating JIS — which will cost $A20 million to run during the same period.

Apart from the data communications portion of the scheme, said to be the first of its kind in Australia, another $A3 million contract has been let to Fujitsu Australia for computer equipment. The system will link the departments of the Attorney-General, Police, Correctional Services, Community Welfare, and Labor, as well as the Industrial Registry.

The Micronodes, with multiple 68000 CPUs, up to 2M-bytes of memory and up to 48 communications ports, can support a variety of terminal protocols at up to 48K-bits/sec. Multiple redundant Micronodes provide the connections to Facom mainframes and a network management centre with redundant DEC Microvax II minis.

Configured as a packet-switching exchange, each Micronode can handle 400 packets a second. Set up for terminal interfacing, it lets users access the network as either X.28 asynchronous terminals when linking to a standard X.25/X.29 host, or provides fullscreen 3270 emulation when linking up to a Fujitsu or IBM host.

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5

Netbios may yet lose out

IBM's strategy of an open architecture for Lans seems to be working just fine so far — but LU6.2 is looming large as the more pervasive interface standard, argues Eric Killorin.

IBM's success with the Personal Computer is attributed, in part, to its use of an open architecture which encouraged third-party application developers to write programs for the device's Basic I/O System (Bios), the underlying set of instructions that enable the machine to function. This strategy resulted in tremendous growth in the micro market as well as a spate of clones.

So it is not surprising that IBM followed a similar approach with the PC Network, its broadband local area network that links microcomputers. The PC Network incorporates Network Basic I/O System (Netbios), a communications interface between the PC Network Adapter card and PC-Dos.

Hoping to foster support for its network, IBM made Netbios an open architecture interface and operating system-independent. Software developers are able to write PC Network applications without having to write to a specific Network Interface Unit (NIU), which controls the network.

Netbios corresponds to the session (Layer 5), transport (Layer 4), and network (Layer 3) layers of the International Standards Organisation's Open Systems Interconnect network model.

The session layer interprets networking commands and establishes a communications session by mapping user-chosen names to network addresses. The transport layer creates a point-to-point connection between two NIUs on a network and handles flow control. Finally, the network layer handles switching and routing of packets on the network.

As a high-level interface, Netbios defines the method and format used to interface to network communications mechanisms. Because of its support for general services, Netbios can accommodate a variety of local area networks using different media, signalling, topologies and access schemes.

Netbios cleanly separates the individual features and complexities of different vendors' networking implementations from a given PC's operating system.

Just as IBM PC compatible vendors emulated Bios to achieve nearly perfect compatibility, networking vendors can achieve PC Network compatibility by emulating Netbios.

Each layer of the NIU's protocol software is limited to interacting with the layers directly above below it. For example, when transmitting data, messages are passed from the PC's interface software to the top layer of Netbios. This layer adds control information and passes the packet down to the next layer for further controls, until the message is sent over a cable.

Conversely, in receiving data, the physical layer receives a signal and then reads and interprets control information inserted by the corresponding layers of the transmitting unit. The packet is then passed up to the next layer, which continues the process up to the session layer. The session layer then delivers the original data to communications software in the destination personal computer.

Netbios receives commands, which control an NIU on the network, in the form of Network Control Blocks (NCB). A command block is issued by interrupting the NIU and pointing to the command block.

NCBs are divided into four categories: general, name support, session support and datagram support commands. This is what each one does:

- ■ General commands allow the NIU to read status or control other commands.
- ■ Name support commands allow users to choose logical names for their personal computers on the network, rather than using numbers for their network address. The name can be a unique one or a group name on the network. A permanent, unique name is required for each NIU.
- ■ Session support commands allow the user to establish a logical connection on the network, send and receive messages, disconnect and read session status.
- ■ Datagram support commands allow users to send and receive a message to or from a name, a group name or all users on the network. Datagrams differ from sessions in that they are never acknowledged by the receiver's NIU and they are less reliable transmissions than are session commands.

So far IBM's strategy of releasing the Netbios specification is working. Several vendors have introduced products that support Netbios, including Fox Research, Banyan Systems, Hayes Microcomputer Products and Novell.

But doubts linger about the longevity of this interface, and this will cause some software developers to rethink their positions. One reason is that IBM will be placing most of its emphasis on LU 6.2, also known as Advanced Program-to-Program Communications, a software interface that provides peer-to-peer communications for devices connected on a token ring network.

Although Netbios can run on the token ring, the real question is: Is it necessary to have two communications interfaces?

In a world where users are demanding less complexity in managing their corporate networks, it is likely that only one interface will survive.

● *Eric Killorin publishes* PC Netline, *a US newsletter on microcomputer networks.*

IBM Token-Ring Network

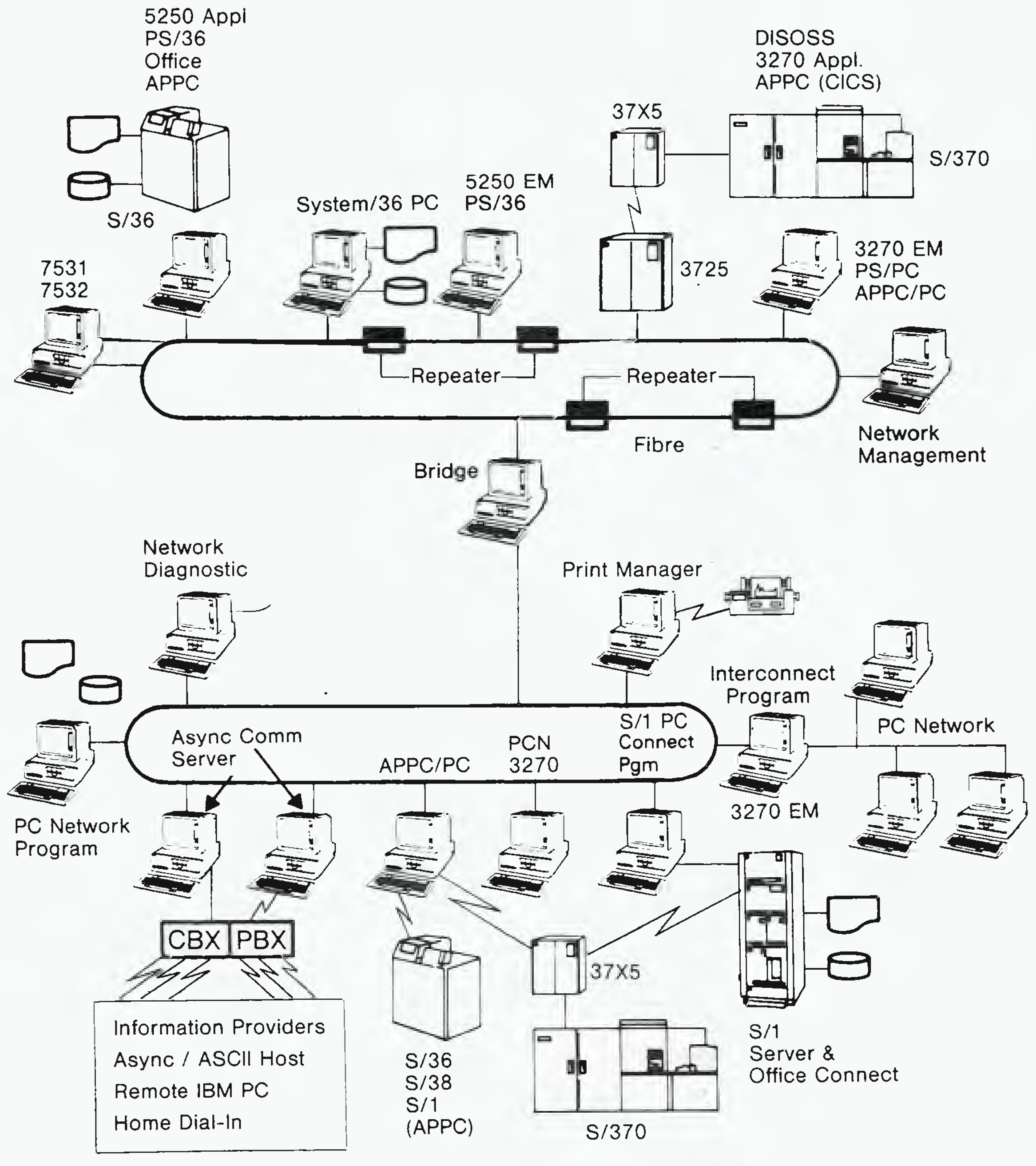


Diagram courtesy of IBM.

Bank hooks into Skynet

AT&T's Skynet satellite services now offer two-way packet-switching data communications to corporate customers and one user, Lloyds Bank, has already opted to instal a 10-node network.

According to Philips Communications Systems, whose Sopho-Net offering is an option on the Skynet ku-band service now being established by AT&T and the Harris Corporation, the bank's network is in operation with nodes in the UK, the US, Japan, Hong Kong, Spain and France.

Other users have shown strong interest for the ku-band service, said a Philips spokesman, but requested that their Sopho-Net installations should remain confidential for strategic reasons. An open wide-area network (Wan), Sopho-Net is claimed to offer protocol conversion for interworking almost any kind of data communications equipment. Optional information management is said to permit substantial cost savings.

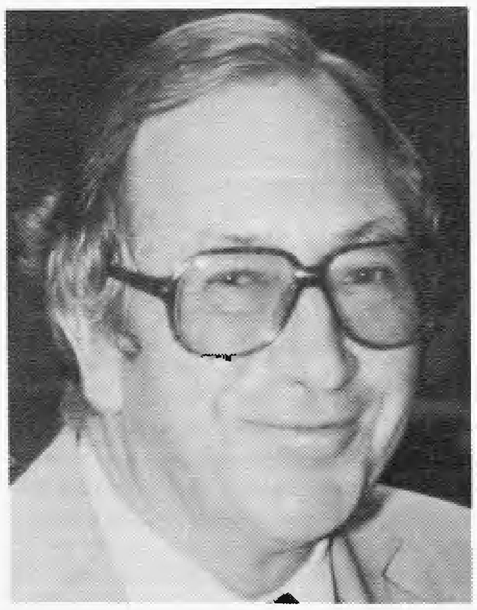
The Sopho-Net option permits two-way packet-switching data communications, with each ku-band customer having access to the packet-switching service by way of a Sopho-Net engine in the earthstation.

Big Four link

AUSTRALIA's four main trading banks, ANZ, Commonwealth, National and Westpac, have agreed to set up a joint network for automatic, secure payment tranfers between themselves and selected clients.

The Bank Interchange and Transfer System (Bits) is to handle the transfer of guaranteed unconditional payments for same-day credit or debit in a highly secure environment.

OTC warns government to ease burden



Bob Somervaille . . . facts ignored.

By Luis Huesch

SYDNEY — The Overseas Telecommunications Commission, reporting a record $A58.5 million profit, has warned the Federal government to reduce the OTC's dividend burden or face a fall-off in crucial long-term investment.

OTC managing director George Maltby also hinted that the commission "might have to look at (its) tariffs" if the weakness of the Australian dollar continued.

The government has increased the commission's dividend by 50 per cent to almost $A30 million, according to the OTC annual report. The commission's operating profit for the year ending March 31 was up 21.5 per cent from $A48 million last year.

According to Maltby, next year's dividend payout has already been set by the government at almost $A40 million, up another 33 per cent.

OTC chairman Bob Somervaille said the commission wanted "an agreed level of after-tax profit". The government, in fixing the dividend level now, was ignoring the fact that OTC — "unlike other authorities" — was paying tax on its earnings.

"International communications require a lot of capital and long lead times," Somervaille said. "There may be restrictions placed on (our) investment unless the dividend policy is relaxed."

George Maltby . . . tariff changes?

The commission plans to spend $A187 million this year on major projects, including earthstations in Sydney and Perth. It spent $A142 million on works of a capital nature last year, the bulk of it on submarine cable systems. Capital investment programs in the next 10 years total some $A2000 million.

Somervaille, commenting on the annual report at a Sydney press conference with Maltby and general manager Chris Vonwiller, argued that the OTC's financial structure was "suffering from a relatively low level of equity invested in the business".

"As a high-growth, capital-intensive business, the need for re-investment in Australia's international telecommunications network is crucial to continued provision of a satisfactory level of service to Australian business and social communications users."

Discussing the performance of what he described as "a desirable enterprise", Somervaille noted that operating profit before tax topped $A100 million for the year. "We just made it. There was no need to fudge," he said.

Telephone traffic revenue grew 17 per cent to $A338 million and made up more than 70 per cent of OTC's earnings. Telex inched ahead in the earnings stakes by a mere 5 per cent, bringing in $A53 million but still accounting for 11 per cent of revenues. According to Somervaille "the rate of decline (of telex) is growing each year". Private system leases grew to $A21 million and 5 per cent of revenue.

International fax was the dark horse of the OTC's operations, showing the strongest growth. There were no separate figures for facsimile traffic, but Maltby said a steep growth in overall traffic charted in the report "reflects the very considerable increase in fax and high-speed data traffic". There had been "an enormous increase in the sheer volume" of data calls, Maltby said.

By the end of this year the number of installed fax machines is tipped to be seven times the total installed in 1984. By contrast, international telegram services slipped 17 per cent in volume.

The OTC last year reorganised its management into five separate operating divisions: Corporate, Business Operations, Technology, Finance, and Human Resources, and instituted a new corporate planning system. Separate business plans have been developed for telephone services, text services, private networks for major users, television transmission, and maritime communications.

Somervaille took issue with the government's recent white paper on government business enterprises, saying the OTC differed from the other 17 or so statutory authorities and government business enterprises, and therefore must be treated differently.

Interference

The white paper seemed to be based on the assumption that government businesses were "in some way inadequate — nowhere is this assumption argued or proved," he said.

He also noted that OTC was subject to nine ministers and departments, with "30 lines of interference". The commission was already meeting the white paper's challenge of being publicly accountable; its management was effective and responsive and "we don't propose to hand over to some department that is not so responsible," Somervaille said.

"OTC fully supports any measure which will improve the performance and efficiency of government business enterprises. In our view the current proposals will not," he said.

Maltby also argued against subjecting "this business which is central to the future economic health of Australia . . . to a fragmented and adhoc approach".

He said international communications were growing more than 20 per cent a year, and this reflected the growing strategic importance business was placing on communications. While OTC had done well economically, the weakness of the dollar "is quite serious in impacting on business . . . we might have to look at tariffs if it continues, in order to remain profitable".

Maltby said more traffic was leaving Australian than entering it, and "we have to pay at the other end in hard currency". Somervaille commented that "we have been too successful" in marketing outgoing traffic, and Maltby agreed OTC was paying "the price of success".

"We are now developing marketing strategies to make people call us," he said. One such move was by offering lower off peak rates, such as in the recent agreement with the UK.

Systech beats stablemates

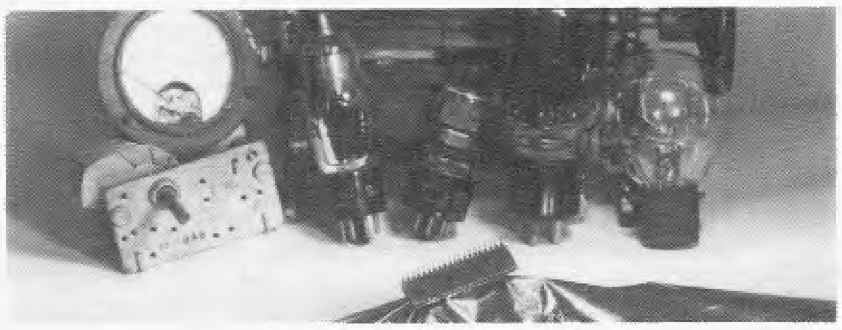
SNA specialist Systems Technology Pty Ltd of Sydney has made $A220,000 profit on sales of $A3.6 million, according to founder Paul Wood, chief executive officer of the US sister company Netlink Inc.

But the group as a whole, which also operates in the UK and West Germany, lost $A2 million on revenues of $A8.8 million.

The group spends $A3 million on research and development, one third of it in Australia and the remainder in the US.

Wood said Netlink had won Codex as its US distributor, and that company had ordered 150 of the new SNA-Gate devices. The company was also working with Nixdorf on selling product in Europe and Australia, has signed deals with distributors in five European countries and negotiated with IBM to work with two clients on systems integration.

At last, the ordinary microprocessor can take its rightful place in history.



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AWA buys into Vsat vendor

NORTH RYDE, NSW — The “sleeping giant” of Australia’s communications companies, AWA, has stirred and opened its eyes to a new sky of opportunities, buying a 20 per cent shareholding in Vsat systems vendor Equatorial Australia Ltd.

Celebrating the tie-up between Equatorial and AWA are Barrie Peters (left), general manager of Equatorial Australia, and Ross Abbott, general manager of AWA networking and business communications division.

The move to join the Victorian Economic Development Coporation, Mercantile Mutual, Prudential, National Mutual and BLECapital as a shareholder in the burgeoning small-dish communications business comes in the wake of a failed takeover bid for AWA itself.

The US Equatorial Communications Corporation (ECC) holds 10 per cent of the shares of Equatorial Australia Ltd (EAL), which licenses ECC’s technology in its bid to become a major player in the market for private data networks using Aussat.

Peter Nicholson, the general manager of AWA’s North Ryde technology group of four divisions, said: “The investment marks AWA’s entry into the satellite communications market and its direct involvment in data handling via satellite communications”.

The general manager of AWA’s networking and business communications division, Ross Abbott, said the 20 per cent investment made AWA the largest shareholder in Equatorial after founder Neil Bennell and co-founder Lindsay Fisher.

AWA already had a stake in the satellite communications business as a major subcontractor to Hughes Aircraft for the $A6 million Aussat monitoring system and had installed satellite transmission systems for Channel Seven in Victoria and NSW, but had no small dish system in its range.

AWA, like the other investors in EAL, had judged the company to have “very significant future potential”, and saw teaming up with the small-dish vendor as “a winning combination”.

EAL managing director Barrie Peters said the new capital of “under $A3 million” would be used for ongoing operating expenses and to buy equipment from ECC for installation at EAL’s facility at Richmond, Victoria. The company’s headquarters are in Sydney.

The Richmond centre will handle assembly and testing of the ECC equipment and integration with local components, such as the rigid-foam molded antenna and its metal substructure, which is being made by a Queensland company. Eventually, AWA hopes to produce electronic components for the system at its North Ryde board and chip-making facility.

EAL’s Richmond centre will also handle marketing and support, and serve as a demonstration centre of Equatorial’s network, as well as monitor installed networks. Clients can opt to have all their network management done through the Richmond centre on a bureau basis.

Abbott — who has joined the EAL board — said there would be “synergy between network solutions and the AWA product line”, such as higher throughput and better utilisation of AWA’s manufacturing facilities and “filling out the product line”.

AWA would go after the “volume components”, such as circuit boards for the C-200 micro earth station controllers. He expected the Equatorial linkup to eventually lead to exports, which carried a 20 per cent incentive bonus, but noted that AWA would have to compete on price to get orders from EAL for its electronics.

AWA will not be involved in the installation of systems, since EAL has a three-year contract with Honeywell for that part of the business. He said installation of a complete system would take less than six months from setting up of a pilot system.

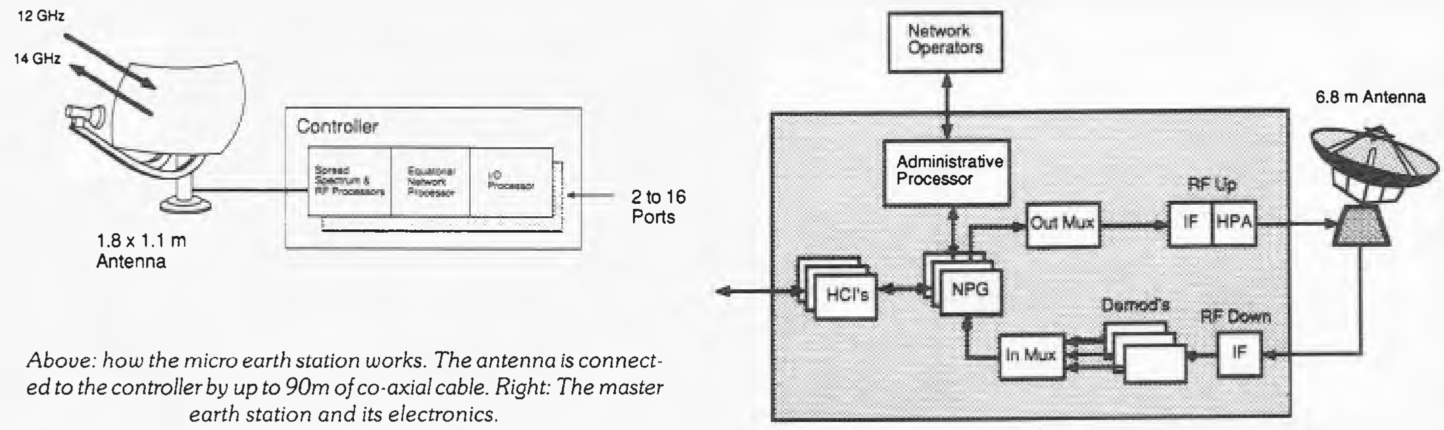
EAL has already installed a pilot system with a 7.3m antenna for the Overseas Telecommunication Commission’s planned Satnet III small-dish network, and has been awarded a Queensland government contract to supply a hub station and 25 micro stations for Phase II of Q-net.

A complete EAL network for using an Aussat transponder covering Australia and New Zealand consists of a master earth station with a 6.8m diameter antenna, any number of micro earth stations with 1.1 by 1.8m micro dishes and associated controllers, each of which can support up to 16 terminals including PCs. A monitoring station can be included, or the client can make use of the 24-hour availability of the EAL monitoring centre at Richmond.

Markets for the systems are the banking industry, to support branches, teller machines and point-of-sale terminals; the finance industry; news organisations; process control; retailers; government institutions and airlines.

Dr Ed Parker, one of the founders of Equatorial, said communications users were “buying network solutions to application problems”. The former Stanford professor who helped “port” the spread spectrum coding concept to market, said ECC’s patented micro-processor based implementation with low cost and small footprint antennas were its main advantages for business users.

Asked about possible interference in high-rainfall areas such as tropical Queensland, Dr Parker said the system’s “dynamic power adjust” feature automatically increased transmitter power to compensate for interference, and a “sophisticated forward error-correcting technique” guaranteed exceedingly low bit error rates.



Above: how the micro earth station works. The antenna is connected to the controller by up to 90m of co-axial cable. Right: The master earth station and its electronics.

‘Electronic diplomacy’ opens a window on vast Indian market

AUSTRALIA opened an electronic window to a huge potential export market recently with an interactive video conference between Melbourne and New Delhi.

Sundar Siva, of the Australian Department of Industry, Technology and Commerce technology development branch, conceived the electronic get-together, and said this type of “electronic diplomacy” could well become a powerful marketing tool.

India expects to spend some $US50,000 million over 15 years launching itself into the communications age — from a base of three million telephones and only 100,000 intercity channels now serving a population of 700 million, the Indian telecommunications secretary D K Sangal told the Melbourne audience.

He said: “We will need 20 million phone connections, one million inter-city channels and 600,000 community telephone stations for rural areas.

“We have a very large expansion programme and aim to have a modern, intergrated digital network by the turn of the century.

“We will be using digital, microwave and optical fibre systems to a very large extent, in addition to our domestic satellite system.”

The video exchange, part of a two-day workshop the department held to highlight the potential for marketing Australian expertise in microwave and optical communications technologies, was seen and heard by some 150 delegates in Melbourne.

Lack of skills

The Overseas Telecommunications Commission, Aussat, Telecom, Olex Cables, and Network Technologies helped arrange the video conference. Issues raised in the workshop sessions, chaired by OTC commissioner Jack Curtis, included the lack of marketing skills; calls on the Department of Trade to help smaller companies with exports; the eagerness of consulting bodies such as Telecom Australia International in overseas marketing help and the lack of a local components industry.

Commenting on suggestions that Australia should adopt a “niche” market approach, Curtis agreed it would be difficult for Australian industry to break into established market areas, but industry should be looking ahead to future trends.

He said: “I might suggest that we pick some areas of national strength in microwave or optical communications technology and do a detailed study of some key overseas markets. Maybe this would need to be a collaborative effort between several companies.”

Telecom spends $2 billion

TELECOM has re-invested all of its $A465 million trading profit this year to expand and upgrade Australia’s telecommunications network, according to chairman Robert Brack.

It will spend more than $A2200 million this financial year, with major projects including a “significant expansion and extension” of inter-capital and interstate trunks; continued introduction of optical fibre routes in the network; progress on provision of ISDN voice and data links; and the development of EFT/POS networks.

Commenting on the monopoly’s annual report, Brack said that along with borrowings and non-cash funds “we were able to invest $2042 million in a capital expenditure program. In addition, expenditure on the installation and connection of customer services amounted to $A403 million.

“This enabled us to meet most of the needs of our customers throughout Australia,” he said. Connections of new telephone services had risen to a record 614,018 — some 23,600 more than in the preceding financial year.

Comsat 'merger' challenged

CWCI International News Service

ATLANTA — Satellite services provider Comsat (Communications Satellite Corp) is to merge with a multibillion dollar telephone company called Contel Corp in an unusual deal that would make the much larger Contel a wholly owned subsidiary of Comsat.

Comsat, the largest US domestic satellite services supplier, will retain its name. But Contel executives will dominate the management structure of the merged companies, which have combined assets of $US6600 million — $US5400 million of which is contributed by Contel.

Contel was made a subsidiary of Comsat in order to get around Federal restrictions that prohibit the sale of the company. The restrictions were imposed because Comsat's international satellite business services the public.

The merger still requires approval from the US Federal Communications Commission, which is expected to be readily forthcoming.

But the man credited with ending the AT&T communications monopoly in the US, MCI chief Bill McGowan, intends to challenge the deal on anti-competitive grounds.

Contel, based in Atlanta, Georgia, operates in both regulated and unregulated communications markets.

Contel also sells large private branch exchanges and networks to Fortune 1000 companies; markets PABXs and key systems to small and mid-sized customers; and supplies government customers with very large PABXs and networks.

Comsat, based in Washington DC, was created in 1962 as the US signatory to the multi-national Intelsat and Inmarsat satellite services authorities. It holds about a quarter of the shares in each consortium.

Most of Comsat's revenue is generated through its role as a carrier's carrier — leasing satellite transponder space to AT&T, MCI and the like. In its other, unregulated line of business, the sale of private satellite networks for voice, data and video communications, Comsat competes with companies that are among its largest customers.

The unregulated system sales side of the business operates at arm's length from the regulated transponder-leasing side. Despite this precaution, the relationship between the two has remained a bone of contention with regulated competitors.

Overseas Outlook

EUROPEAN Interactive Media (EIM), a counterpart to American Interactive Media Inc (AIM), has been formed by compact disk pioneers Philips and Polygram to spearhead European software development for compact disk interactive (CD-I) systems. CD-I is a new media standard that simultaneously integrates audio, visual and text/data functions in a real-time interactive format.

* * *

IBM Japan has launched a raft of Token Ring network equipment and software on the Japanese market that combines to provide extensive networked office and factory environments. Nobuo Mii, head of IBM Japan's R&D, said the networking system marks another step in IBM's Systems Network Architecture (SNA) effort.

* * *

SWEDEN's L M Ericsson is to supply four Indian companies with two million telephones a year for eight years. Poorly equipped in telecommunications, with only 3.5 million telephone users out of 750 million inhabitants, India is attempting to catch up through technology transfers. Other companies vying for India's phone business include France's Alcatel-Thomson SA and Jeumont Schneider, Japan's Oki Electric Industry Co, and Belgium's GTE-Atea NV.

* * *

NOVELL, Santa Clara Systems, and Hyundai Electronics of South Korea have joined up to produce a diskless personal computer for less than $US600. The 8088-based personal computer will include a network interface for tying into Novell's Netware local-area network (Lan), thereby at least halving the current price of a Lan node.

* * *

GERMAN-based electronics and communications giant Siemens has bought a majority interest in GTE's US and international transmission business, as well as in the company's international public switching and business systems operations. Siemens paid GTE $US420 million for its majority interest, which will be handled by Siemens Public Switching Inc.

* * *

MA Bell, daughter Pacific Bell, has teamed up with Integrated Technology Inc (ITI) of Plano, Texas, and Tandem Computer, of Cupertino, California, to develop advanced telecommunications network systems. Pacific Bell will buy a quarter interest in ITI, a developer of network software technologies, and Tandem will increase its existing ITI holding to the same level.

* * *

SIEMENS and Fujitsu have entered the emerging US low-end PABX and "smart building" market with modular and expandable systems that start at 40 lines and can grow by the addition of standard boards and cabinets to 864 and 2000 lines respectively. The Siemens Saturn IIE is designed to fill a gap between the Saturn II with its upper limit of 200 lines and the Saturn III, which starts 150 lines. It costs between $US400 and $US1000 a line. Fujitsu's Focus 960 costs $US600-700 a line. Both systems offer least-cost routing, automatic call distribution and a T1 (1.54M-bit/sec) interface.

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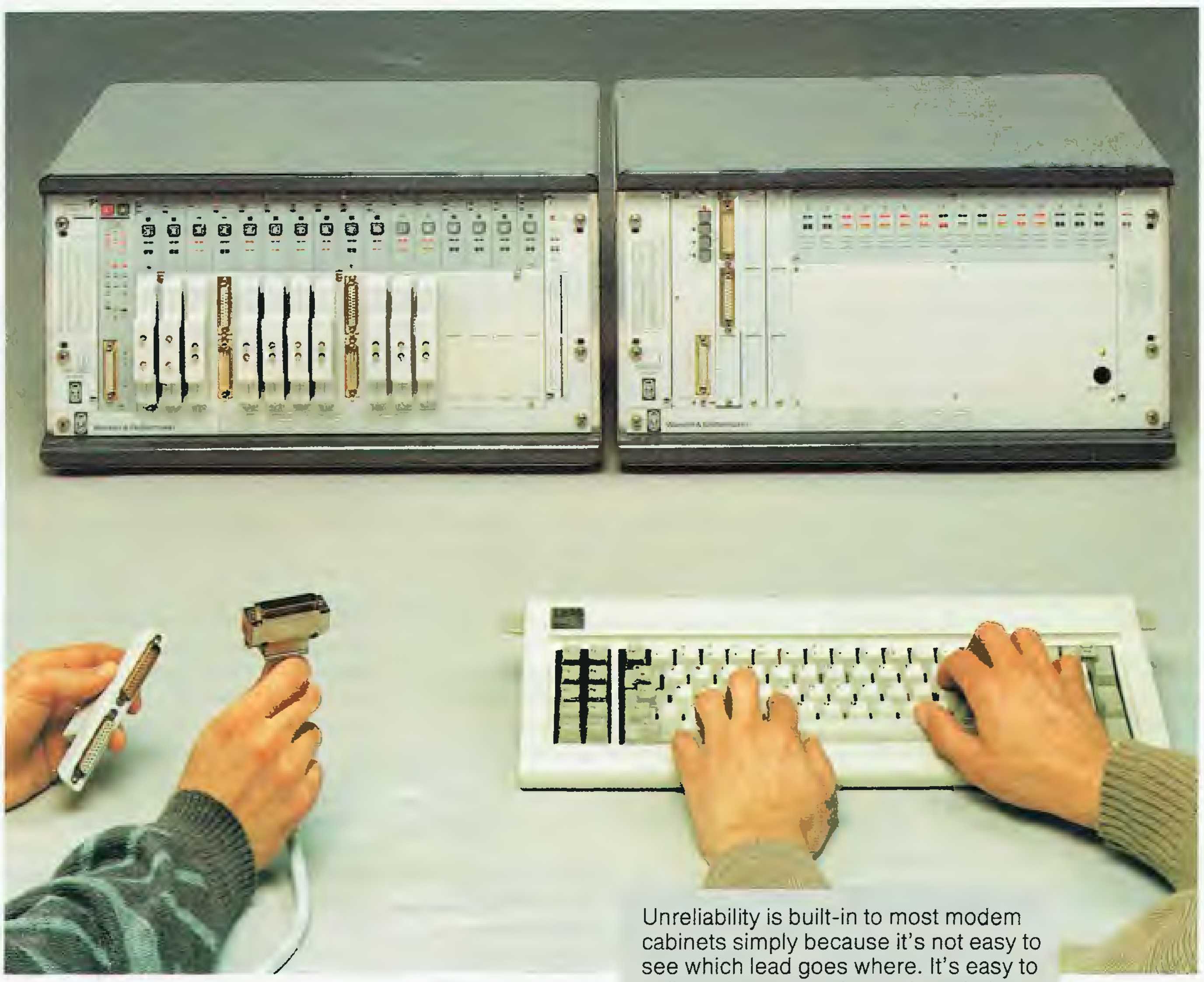

Data network diagnostics? Loop-in, back-up and switch circuits manually or by remote control with DNE

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AST climbing on Star bandwagon

By Patricia Keefe

AST Research has jumped on the AT&T Starlan bandwagon, unveiling a compatible network said to provide a flexible, easy-to-use resource-sharing solution.

The AST Star System meets the IEEE 802.3 (Starlan) draft specification, uses inexpensive twisted-pair cabling, and includes an IBM Netbios-compatible interface. Bridges are available to other networks, such as IBM's Token Ring.

The Star System complements AST's four-month-old Resource Sharing Network (RSN), a 5M-bit/sec coaxial IBM Netbios-compatible network.

RSN supplanted the PCnet that AST used to buy from Orchid Technologies, but for which it no longer sells starter kits. Its own low-end network offering, the AST PCnet II, is still available and will continue to be supported. But AST is unlikely to further enhance the product.

Orchid said it too will stop enhancing PCNet hardware. But it will continue to support its installed base and will launch a new high-end network in January.

The AST Star System is available in two configurations: work group (daisy chains), which link up to 10 IBM PCs or compatibles spanning 120mm at a "very low cost per connection", and the departmental (star) configuration, which connects up to 64 PCs spanning 2400mm.

Work group configuration can be as simple as three PCs with AST Adapter cards sharing peripherals on a daisychain or bus topology network. Users can add to the network with a combination of Starport, a standard Starlan adapter card, and Turbostar high-performance adapter cards. Turbostar provides power users and file servers with increased operational speed.

Work groups can build a 10-mode PC network by buying a starter kit for $US795 and daisychaining PCs with adapter cards. Departmental configurations are built using the Starhub/8 and Starhub/16 expansion units.

The starter kit contains the AST-Network program and AST-Netbios option. The network program provides two modes of electronic mail, a user-definable applications menu interface, and resource sharing.

The Netbios option provides a link between Star System hardware and IBM Netbios-compatible software, such as IBM's PC network program. In addition, users can mix IBM PC network and AST network programs on the same network.

Star System was due to be available in the US from late October at suggested retail prices of $US795 for the starter kit, required for initial installations, and $US795 and $US1196 respectively for the Starhub/8 and the Starhub/16.

Chipset scotched

TEXAS Instruments had denied rumors that a two-chip token ring chip set is slated for release in the first or second quarter of 1987, saying instead that the product is targeted for a 1988 introduction.

Bridge claims breakthrough with 3270-type Lan server

BRIDGE Communications Australia has announced what it claims is the first local area network server that lets users attach IBM 3270-type terminals to both IBM and asynchronous host computers over an Ethernet Lan.

The company said its new Communications Server/1-3270 brings IBM and compatible terminals into the Bridge multivendor networking fold as "generic" terminals with transparent emulation which makes the terminal look like a VT100 to a DEC host and a 3278 to an IBM host, for example.

Richard Fremantle, Bridge general manager in Australia, said the product opens up the large installed base of IBM terminals to the advantages of Lan functionality, allowing users to substitute local networks for IBM cable multiplexers or to go "beyond the IBM world".

Connection to the host is via the Bridge CS/1-SNA, said to be the only Lan server allowing direct IBM connection without a 3274 controller.

The 8-32 port device, for which Fibronics International of the US developed a special Multibus I/O module, supports multiple sessions per port and can be configured with various options, including X.25 packet-switching and RS232C cards.

Offcom's telex box targets executives

The Tosbox communications controller.

OFFCOM has launched the Tosbox office communications controller, built around an MS-Dos compatible microcomputer and claimed to be the world's only standalone computerised Telex system that works in full conversational mode.

The modular Tosbox system, which runs the company's proven Tos (Telex Operating System) software and is Telecom-approved for Mode 1 direct connection to the Telex network, can be upgraded to full data switching, line management and local-area-networking capacity.

It costs around $A6800 with one disk drive and printer, and about $A2000 more for a 20M-byte hard disk version.

Incorporating a 9in green screen, it can also be configured as a PC and used for PC applications even while the system continues to perform its Telex functions. The software incorporated in the Tosbox is said to help reduce line costs by up to 50 per cent on local calls and 41 per cent on international connections using an alternative Telex carrier such as Telexon.

The machine has a claimed throughput capacity of three ordinary Telex machines. Messages are automatically filed, and full reports are available for accounting purposes. The unit automatically retries up to 50 time over eight hours for urgent messages, and as many times over 48 hours for normal telexes.

Offcom managing director Norman Young said the company received a preliminary order from one government to replace all its Telex machines around the world with Tosbox units including an encryption facility. He said the unit's simple user interface made it ideal for middle management staff "who work back late at night and have no Telex operator left to send messages.

SNA devices launched by Systech

SYSTEMS Technology of Sydney and its US sister company Netlink have built on the success of their ST3703 SNA (systems network architecture) interface with two new SNA devices.

SNA-Gate is said to be an enhancement of the original ST3703 — of which some 1500 are installed worldwide to perform multiple protocol conversion, including BSC (IBM bisynchronous), asynchronous, RJE (remote job entry) and Burroughs poll-select.

Of particular interest for banking applications is the claimed BSC protocol conversion improvement, with enhanced emulators specifically for ATMs and various minicomputers.

SNA-Gate is also said to function as a cluster controller for personal computers, providing multiple SNA sessions through the PCs serial port. ANI, Mitsubishi and Clirs have already bought the device, according to Systech.

The new SNA-Hub series is a range of SNA concentrators designed to network multiple SNA nets over a single backbone link. The first in the series is the 3723-4, with four SDLC (synchronous data link control) links. It is claimed to enable terminals on an SNA network to access host computers from IBM to Tandem, polling downstream devices through a single front-end processor port.

Systech founder Paul Wood, who heads the US operation, said in Sydney recently that the first installation of the SNA-Hub was being tested by a US bank which hoped to save $A750,000 a year in line costs by integrating counter terminal and ATM networks.

IBM linked to Vax at channel speeds

CHANNEL-SPEED connections between IBM mainframes and DEC Vaxes are claimed possible with a hardware/software package introduced jointly by Intel and Flexlink International Corp.

The hardware portion of the package is Intel's 9750 Fastpath, a Multibus-based controller that in the past has allowed Ethernet and Multibus connections to IBM systems. Flexlink is providing the connectivity software for the Vax links.

Roger Thomas, general manager of Intel's Systems Interconnect Operation, said: "The unique benefit of this Fastpath and Flexlink connection is that now an IBM/DEC user has a single-vendor solution available from a major supplier of IBM channel technologies. This agreement allows Intel to deliver complete IBM mainframe connectivity solutions to the marketplace."

Thomas said Fastpath would support direct-channel connectivity at 3M-byte/sec between IBM mainframes and Vax minicomputers.

Terminal users on either system can log on and run applications in emulation mode on the other system, with the user seeing on his terminal what appears to be his or her original system.

According to Thomas, users can share high-speed access to data files, initiate tasks on each other's systems and share peripherals, such as laser printers, without the throughput constraints of communication-based links.

The products also combine to act as a bridge between IBM System Network Architecture and Decnet networks.

Fastpath can be customised to support up to four simultaneous connections in addition to the Vax/IBM link. Thomas said those other connections might allow links to systems on Ethernet or Manufacturing Automation Protocol networks, for example.

The Fastpath control unit was designed to fit into a standard 19in rack. The Fastpath-Flexlink combination is scheduled to be available in January at prices starting at $US80,000, according to the vendors, who will market it jointly.

Sytek launches Lan gear to make up for loss of IBM order

By Mary Petrosky

LAN (local area network) vendor Sytek — seeking to make up for the loss of an OEM contract with IBM that used to bring in half its revenue — has launched a series of local network products designed to enable users to integrate network environments.

The new products interconnect Sytek's System 6000 personal computer network to its terminal-to-host network, other vendors' networks and IBM mainframe environments.

All support a version of Novell's Advanced Netware 2.0A operating system, which has been adapted to operate on Sytek's System 6000 network as well as a new network file server.

Sytek also introduced the 5420 Internetwork Bridge and the 6430 SNA Gateway for connecting the System 6000 with IBM hosts. The 6420 is designed to link the System 6000 with Sytek's asynchronous terminal networks, the System 2000 and Localnet20 as well as the System 3000, and IBM 3270 net product.

Sytek is looking to increase its installations by expanding its personal computer network products, according to Dataquest analyst Brad Baldwin.

"Sytek's bread and butter has been in the terminal network market," Baldwin said. "These announcements are significant because they show network boundary lines are beginning to erode."

Interconnectivity is a major issue facing users, and this drove the decision to adopt Novell's Netware network operating system. Sytek decided to offer the Netware operating system because it has been gated to other networks and has a large base of available applications software.

Users can interconnect a System 6000 with another vendor's network by putting network interface cards from both companies into one file server and using Netware to communicate across them.

The network servers are available with either 75M-bytes or 150M-bytes of storage The 6611 is both a file and print server and includes a floppy disk drive, a keyboard and display. Another product entry, the 6620, is a 150M-byte server.

The 6430 SNA Gateway consists of a file server interface card and software. The 6430 can emulate an IBM 3274 cluster controller and supports up to 32 simultaneous host sessions.

The 6420 Internetwork Bridge allows personal computer users to access a host computer, micro or any other device on Sytek's System 2000 asynchronous network and System 3000 IBM 3270 networks. It supports 16 simultaneous sessions and can emulate most terminal types, providing terminal access and file transfer.

Desktop data PABX cuts costs

A DESKTOP data PABX unveiled by US maker Comdesign brings terminal-to-host connection prices down to $US80 per line.

The entry-level 72-line CX1500 Desktop Data Switch system retails for $US7600. The 144-line configuration costs $US11,500, or $US80 per line.

The CX1500 handles up to 144 asynchronous lines at 9.6K-bit/sec. In addition to providing dedicated terminal-to-host circuits, it can manage contention-based host access so that available ports can be shared by a larger number of terminals. The CX1500 provides 75 classes of access that can be given priority by individual, group or size of job, a company spokesman said. The switch competes head-on with Equinox Systems' DS5 data PABX.

Comdesign's Ronald Jeffries said: "When a group of terminals are only in use about an hour a day, for word processing and electronic mail, it is usually all right to have twice as many terminals as ports."

The CX1500 targets a broad segment of customers. "Our market analysis shows that the average PABX installation supports 150 lines," Jeffries said. He added that the CX1500's cards could be re-used by customers wanting to migrate to Comdesign's high-end CX3000 chassis, which supports up to 408 lines.

Mix-and-match cards 'have export potential'

Russell Crothers (right) and R&D manager John Parkinson . . . hoping for exports.

DATACRAFT has developed what it describes as a unique solution to the profusion of often disparate network components in Netlink, a mix-and-match family of nesting cards intended to form the backbone of a series of integrated network products.

The company believes the locally-designed product has "excellent export potential".

Netlink, a rack-mounted communications hub which the Victorian company spent three man-years developing, can cater for some 20 plug-in modular data communications products from Datacraft. The company says it will design new products to integrate into the Netlink architecture.

The system consists of rack-mounted card nests sharing a common backplane, with integrated network management in each nest. This facility allows remote access and control of the plugin cards, typically modems, from any point in the network.

Each card nest provides eight general purpose dual channel card slots, a special purpose controller slot and a power supply slot. The backplane consists of 18 DB25 data connectors, 18 sets of four-wire audio blocks and two power supply connectors.

Datacraft technical director Russel Crothers said Netlink was intended as the central or regional node of high-density data networks.

He cited a bureau application where database users can dial into a single netlink cabinet filled with intelligent Netlink 5270 dual auto-answer modems for access to up to 96 computer data channels via a single telephone access number served by a Telecom rotary group.

Crothers said Netlink could also provide cost-effective system interconnection in organisations where high-speed data transfer was required.

Modem cards available for Netlink range from the 5270 300 bits/sec component to the 19,200K-bits/sec 5096 model used on Telecom ADS lines as well as local area network baseband modems.

Crothers said several prominent Australian companies had made "firm commitments" to the new product.

He said: "Early interest from several international corporations leads Datacraft to believe that the Netlink products have excellent export potential."

Once upon a time...

in the treacherous jungle of the Australian high-tech industry, there lived a little software company. Like all good little companies, it learned well from others in the same area and gained its trade experience in the field of office communications, before venturing out into the world alone. Thus begins the enchanting story of OFFCOM.

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Exchange for small nets

GANDALF Pacific has announced a small data PABX for networking up to 128 devices in local or wide-area networks at less than $A200 per connection.

The Sydney subsidiary of Canadian data communications vendor Gandalf Technologies said the PACX (private automatic communications exchange) 200 model was intended as a standalone unit for smaller office data networks but could also provide an expansion path, via various interface modules, to the company's larger PACX 2000 distributed networking system.

Terminals, printers and microcomputers from multiple vendors can be networked to communicate with each other, or with minis or mainframes via the PACX 200, according to Gandalf.

Apple improves comms between Mac and IBM

By Laurie Flynn

APPLE Computer has moved to improve communications between Macintoshes and the IBM world, announcing joint products with Northern Telecom and 3Com.

It recently demonstrated two products with NT and discussed a third that makes it easier for users to transfer files from a Macintosh connected to NT's Meridian SL-1 and SL-100 PABXs to other computers connected to the NT switches.

Northern Telecom said both companies planned additional announcements.

To streamline data transfer, Apple has automated the log-on sequence of its Macintosh Applelink electronic mail program, which can send messages to any computer on a NT PABX.

Apple has also worked with Palantir Software on a customised version of Palantir's Intalk communications program. With the $US145 customised version, all steps towards accessing a system connected to a NT switch are fully automated, according to Apple.

In addition, the company announced that Dataviz Corp of Norwalk, Connecticut, is working on a version of Maclink that would work with NT switches and would automatically convert Macintosh files to Dos format and vice versa. It should be available next year.

At companies with both Macintoshes and Dos-based systems, IBM PC users will gain access to Apple's Laserwriter, and users of Macintosh desktop publishing software will have access to Dos files, thanks to the enhanced products, a spokesman said.

At its annual shareholders' meeting in Santa Clara, California, 3Com and Apple unveiled a jointly developed enhancement to the Etherseries network operating system, in addition to plans to promote 3Com's 3Server3 network file server.

The enhanced version of the Etherseries network operating system gives a Macintosh user expanded network management functions, including the ability to instal and control the network. The current release of Etherseries requires users to do this through an IBM PC. The enhanced version will be available from December in the US for $US850; upgrades will cost $US100. The 3Server3 and Etherseries software link Macintoshes and IBM PCs on Appletalk and Ethernet networks.

Apple declined to say what effect the 3Com-labelled products will have on the development of its own file server product, which it has said is under development.

"We have a lot of network servers in development," said Peter Friedman, Apple's marketing manager of desktop communications. There is no one server that meets all the needs of the marketplace. The most important thing about this product is that it stands in the middle of the 3Com network environment and integrates Ethernet and Appletalk and, eventually, token ring."

Convergent units 'rival Microvax II'

By James Martin

CONVERGENT Technologies has announced a series of Unix-based work group servers, with 68020-powered highend models capable of supporting up to 128 users and said to give DEC's Microvax II minis a run for their money.

The work group servers run Unix System V but also support the Convergent Technologies operating system.

At the low end the S/50, uses the Motorola 68010 CPU and supports up to five users. It provides a communications link to other work groups through 3Com's Ethernet and AT&T's Starlan local area networks and features an IBM PC-Dos coprocessor.

US prices of the S/50 ranges from $US6000 to $US14,000, depending upon the number of users, with a maximum 2M-bytes of random-access memory.

Building on that system are the S/120 and S/220, said to feature "more than twice" the performance of a Microvax, with the S/120 in the $US10,000 to $US20,000 price range. The S/120 supports up to 12 users, while the S/220, priced at $US14,000 to $US32,000, can accommodate 22.

The S/1280 can support up to 128 users and features more than 8.8 Mips (million instructions per second) of computing power in its maximum configuration.

Costing between $US30,000 and $US350,000, the S/1280 has large database application capabilities in either dedicated or networked environments. Maximum disk storage is 6G-bytes.

FIRST IMPRESSIONS

It's all done with Mirror

Communications World expects to get more deeply involved with proper tests and solid reviews of hardware and software in the next year when this magazine goes monthly. In the meantime, we thought you might perhaps like "teasers" such as this quick look at new comms software.

IT'S ALL done with Mirror! When casting about for a simple, cheap comms package to bundle with our international computer industry news service early this year, I chanced upon a *Byte* magazine ad announcing a $US49.95 Crosstalk clone called Mirror.

It was offered by a company calling itself Softklone, since embroiled in a tussle with an understandably peeved Microstuf, the makers of Crosstalk. So when I ordered the package in April and did not hear from Softklone, I assumed the almost free lunch was over and I had been too late.

Now, after ordering and receiving in May a cunning little memory-resident electronic mail checking program called Get! ($US99) from its US maker, Cygnet Technologies, I learned that PC Extras of Sydney does sell Mirror locally (around $A120).

Lynn McDonough pressed a copy on me during an idle moment at the recent "Ghost of Comdex" event in Sydney, so I forsook the evening's cocktail party to rush home and test this long-lost find.

I use the word "test" loosely here, but can report that after only an hour or so of sleuthing Mirror did its stuff properly.

(Mirror wouldn't sign on to Austpac cleanly using my existing Crosstalk script file: I found it doesn't like to find COM1: under the POrt label, as the initial C elicits the error message: "Can't Find Device C" during the sign-on procedure.)

It helped, too, to avoid having Crosstalk's standard setup file STD.XTK online at this stage, because with it, and without reference to the manual, I was able to sentence my otherwise ever-faithful Netcomm Smartmodem to inarticulate inactivity. So, without the STD.XTK file online and with the original Austpac script amended as mentioned, preliminary results show that Mirror looks like Crosstalk, feels like Crosstalk and, almost, works like Crosstalk.

There were a few hitches and glitches, such as having difficulty getting out of an automatic redialling loop, but I put most down to "failure to follow instructions". No doubt the many detailed examples in the manual would have cleared up any misunderstanding.

Mirror's makers also claim to have added a number of improvements over version 3.6 of Crosstalk XVI, such as background operation, call progress monitoring, CRC error-checking for XModem file transfers, a somewhat painful text editor using Wordstar commands (but no word wrap!), an extended list of emulations (including my personal favorite, the late lamented IBM 3101); password security, and a few other bits of polish.

These include unattended file transfers and simultaneous printing, receiving, and text editing. It can even receive in the Kermit protocol from mainframes or minis for people who have set up Kermit systems as file servers, for instance.

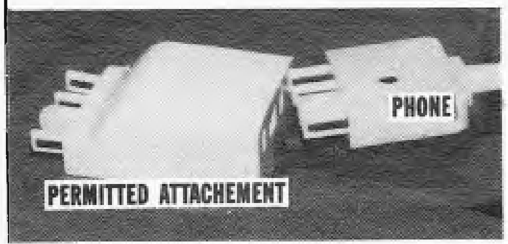
Mirror comes preconfigured for a number of host and database systems such as Source, Compuserve, MCI Mail, BRS, Tymnet, and Telenet. These scripts are initially academic here, but could be edited by a determined user putting in his or her own codes after the necessary Midas numbers.

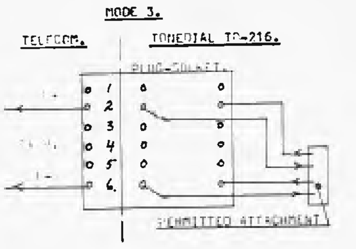
Documentation consists of a textbook-type tome of the kind of photo-cloned manuals you can buy with your pirate software in the East, but it is very comprehensive and explains thoroughly the commands, use of the script language, and so on.

Alphabetical command summary, appendices with modem information, a full listing of error messages, and an index are included.

RECOMMENDATION: Well worth the small outlay.

— Luis Huesch





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Soft Spots

A Mac-to-Vax communications package that supports Macintosh file transfers and performs terminal emulation has been released by Pacer Software of La Jolla, California. The $US2000 program creates up to four virtual disks on the Vax for each Macintosh that looks to the Mac as attached drives, lets users copy Vax files to and from the vertical disks and permits host applications to interact with the Macintosh. Licensees of the company's PClink version of the software will be able to use the Vax as a bridge between Macintoshes and PCs.

* * *

FILE SERVER software that is claimed to let up to 32 Macintosh users share hard disks, files and programs across Appletalk Lans is being offered by General Computer Co of Cambridge, Massachusetts. Priced at $US299, Hypernet, which runs on the company's Hyperdrive internal hard disk, prevents simultaneous file updates by two or more users, but lets locked-out users view the contents of a shared file. Disk storage can be allocated dynamically among net users, the vendor said.

* * *

DIGITAL Research Inc will be launching a series of Gem add-on products over the next six months starting with a $US150 communications package called Gem Comm.

* * *

ASHTON-TATE's dBase III Plus and dBase III Plus Lan pack will now run on AT&T's Starlan local-area network, the company announced.

* * *

CONCEPT Omega Corp has announced Thoroughbred Business Basic, a business-oriented language for the IBM RT workstation. The program runs on AIX, IBM's version of the Unix System V operating system. Suitable for porting existing interpretive Basic programs on to the RT, the $US750 package is compatible with MAI/Basic Four's BB3-BB4 Business Basic language and is available on Unix-based systems from more than 60 manufacturers.

* * *

DATA GENERAL has introduced a new version of the DG/RDos operating system for the 32-bit Eclipse MV/2000 that provides a gateway for users of DG/RDos (real-time disk operating system) to the company's line of 32-bit systems with little or no software modification.

* * *

A MULTI-USER operating system said to support up to nine terminals and originally developed for DEC LSI-11/23 minicomputers is now being offered for 80386-based personal computers by a Florida company.

Hurricane Systems Inc claims its Master Operating System (Mos) is faster and more efficient than both Microsoft's MS-Dos and AT&T's Unix. The operating system runs on the IBM PC XT and AT and DEC minis.

Packaged with applications software, Mos is targeted at small to medium-sized companies in general business and vertical markets such as retail, manufacturing, medicine and distribution.

System allows Dos and Unix data and file exchange

INNOVATIVE Software has announced a system that allows personal computer users to exchange data and files between Dos and Unix operating environments.

The system consists of three modules: Innovative's Smart Software System 3.0 Unix version, the Smart Software System 3.0 Dos multi-user version for local-area networks (Lan) and AT&T's Unix implementation of its Starlan network. The Smart Software System is an integrated business application software package that includes a word processor, a database manager and spreadsheet with graphics. The modules can also be used in a stand-alone mode.

"This is the first step the industry has seen to allow a totally transparent, seamless Unix/Dos connection," said Ronald Ferguson, Innovative's vice-president of marketing.

Up to 32 Dos users can be connected to each AT&T Unix PC file server over a Starlan network, with the possibility of adding more Unix PCs to the network to act as additional servers. In terms of performance, however, the Unix PC is designed to support from one to five heavy users, according to AT&T.

The Dos and Unix versions of the Smart software reside on the same server, the Unix PC, in separate partitions. The Unix PC file server accommodate both system environments. Both the Dos and Unix versions of the Smart software use a consistent format across the two operating environments, allowing data to be moved from a Dos machine to a Unix machine. The difference in operating systems is transparent to the user, who sees an identical interface on a Unix or Dos machine, according to the company.

Smart data files can be used in both Dos and Unix environments. For example, a data disk created on a Dos personal computer can be inserted into a Unix PC, read without file conversion and used in the Unix environment.

Protection

Innovative's Smart Lan for Dos contains automatic file and record locking in the data manager and file locking in the word processor and spreadsheet. Multilevel password protection down to the screen level is also provided.

The Dos user gains data compatibility and network productivity, as well as the ability to move to the more powerful Unix PC, the vendor said. The Unix user can use Dos business applications and exchange data with other departments using Dos computing. For MIS, one network implementation can serve both operating system environments.

The Dos Lan versions of the Smart Software System costs $US1795 for three access nodes, with each additional node costing $US595. The Unix version costs $US895 on a Unix PC for one to five users. Both versions are available now. AT&T's Unix version of its Starlan network is currently in controlled introduction, with plans for general availability by the end of the year.

'Server' turns AT into database machine

Gupta Technologies has licensed its SQLbase to two major mainframe software companies, Computer Corp of America and Computer Associates, according to president Umang Gupta.

SQLbase reportedly transforms an IBM Personal Computer AT into a relational database server. Personal computers on the network can transmit SQL commands to SQLbase on the PC AT and share the services of the database management system, Gupta claimed.

The software's function is compared to a Britton Lee or Teradata database machine that can accept queries from multiple users on DEC Vaxes, manage the data access functions and return the data, according to the company. The system also operates on any network that is IBM Netbios-compatible, a spokesman said.

SQLbase includes a relational database engine, network router programs and the SQL Talk interactive data manager and report writer. It also includes a C language interface for developing applications that can access any SQL-based DBMS on the network.

SQLbase is claimed to be the first relational database server to run under PC-Dos. The product is also said to have recovery features not available with single-user file servers. Multiple copies of the software can be handled on the one network. Available immediately, SQLbase costs $US995 for the single-user version and $US1995 for the multi-user version.

OSI interface from Japan

JAPAN's Kokusan Denshin Denwa Co (KDD), which holds **the monopoly** on that country's overseas telecommunications services, has announced Open Systems Interconnect (OSI)-based software for use in handling messages and file transfers. Originally targeted at DEC Vax-11/780, the software also interfaces with other vendors' systems, KDD said.

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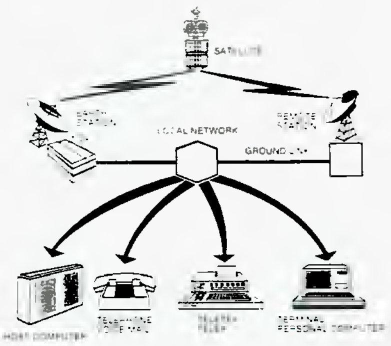

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TRADE ENQUIRIES WELCOME

Morris McLeod . . . "use is the real test".

Real test is: will it be used?

By Noel Bennett

THAT the AMP Society is a major consumer of raw computing power may come as no surprise, given the nature of the insurance industry, its pioneering computer efforts, and the society's economic stature — income before tax of $A2930 million in 1985.

The AMP's appetite for computing resources is highlighted by the recent decision to upgrade its IBM Sierra Model 200 to a Model 400, said to be one of the first Model 200 users in the world to do so.

This machine is augmented by two IBM 3084 machines, and the Society is also blazing new ground with a high-speed Hyperchannel link between one of these 30840 machines and a remote 3480 cartridge tape drive (*CW*, August 22, p2).

These machines, running principally under IMS and TSO, and to a lesser extent CICS, process business conducted throughout Australia and New Zealand. Considering the enormity of this computer power and associated developments, the supporting networks are relatively straightforward — for good reasons.

The manager of the AMP's data processing division, Morris McLeod, explains that networks can amount to a larger overhead, taking into account not only the line costs but also associated terminals and staff training.

The AMP argues that the intrinsic nature of the insurance industry lends itself to centralised computing. While certain line economies could be effected by dispersed computing power, they would be outweighed by the costs of setting up and maintaining computer centres in the States.

Accordingly, the network requirements essentially support terminal-to-host data entry and enquiries. Another reason for this star network is that the volume of direct capital-to-capital data traffic, say from Melbourne to Adelaide, is very low.

The Telecom network, supporting some 1400 terminals in the field, comprises 48K-bits/sec DDN lines from State offices to Sydney. The AMP also uses 9600 and 4800-bits/sec lines in a separate network to handle the general insurance business processed by Concurrent computers in conjunction with a version of the Polisy insurance package.

While these data networks might seem to be relatively straightforward, the society has about 30 personnel in its communications teams, working under AMP management but seconded from the subsidiary company Computer Sciences Australia Pty Ltd.

McLeod said some pilot studies are being undertaken on linking branch offices within a State to capital city offices to determine whether electronic messaging can be justified against the costs involved.

As McLeod said, it is comparatively easy to place a terminal on a manager's desk to allow quicker and more effective communications. The real test is whether the manager will use the facility, which depends on changing work habits and outlooks.

The AMP is also piloting the installation of Dissos and its electronic mail facility. Here, McLeod is encouraged by what he has seen overseas, with important payoffs, such as avoiding telephone "tag" and the administrative complications and cost of conventional memos.

Monitored

McLeod said the AMP has briefly considered using Aussat, but at this stage the straight-out business costs are not attractive and neither are response times, which in some cases could be important to operations.

As with many other large organisations, voice costs are still larger than data. The AMP has dedicated lines between Sydney and capital city offices as well as tie lines from many branch offices to the respective city offices. These tie lines are constantly monitored to ensure optimum economic use.

In most of the capital city offices, voice traffic is handled by NEC 2400 PABXs with small NEC machines in branch offices. McLeod said the potential of the 2400 to handle data had been recognised, but was not a criterion for its selection.

On the coming ISDN facility to be offered by Telecom, McLeod said the AMP believes this traffic integration will be used in due course, but the facility would be unlikely to be an advantage to an organisation the size of the AMP "for some years". The prime consideration in any new venture is the cost/benefits equation.

The AMP New Zealand operation also processes its work on the Sydney complex via 9600-bits/sec OTC lines.

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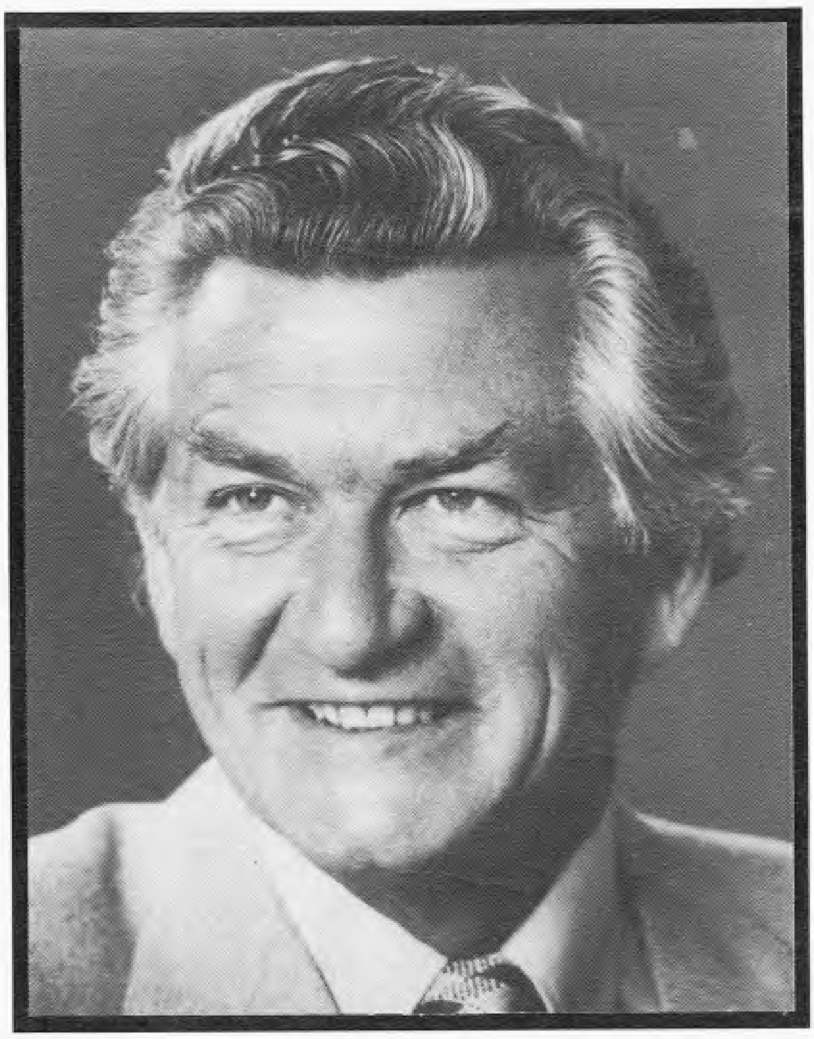

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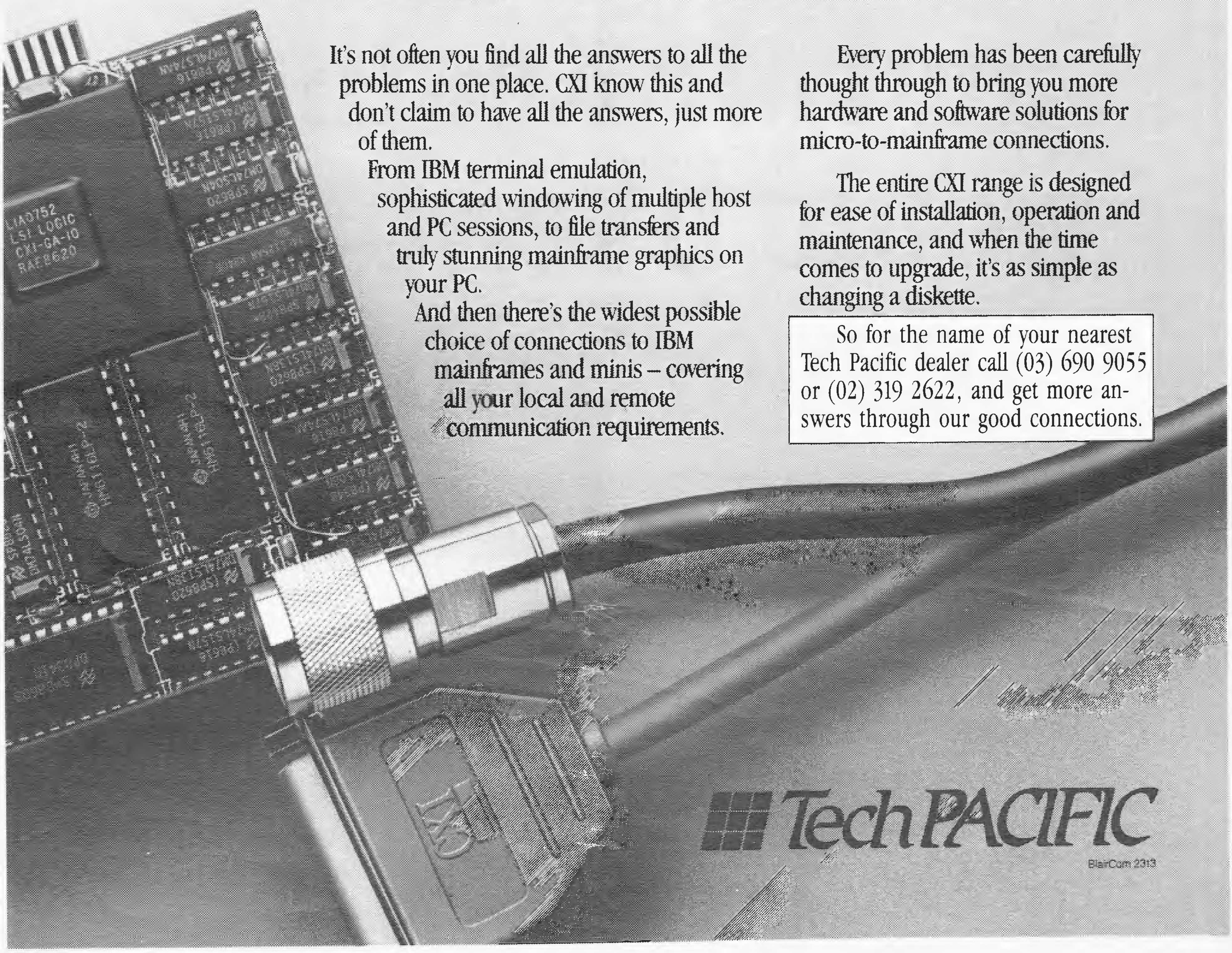

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